Gas Journal

Vol. 274. 105th Year. LONDON, MAY 13, 1953. No. 4693. Price 1/3

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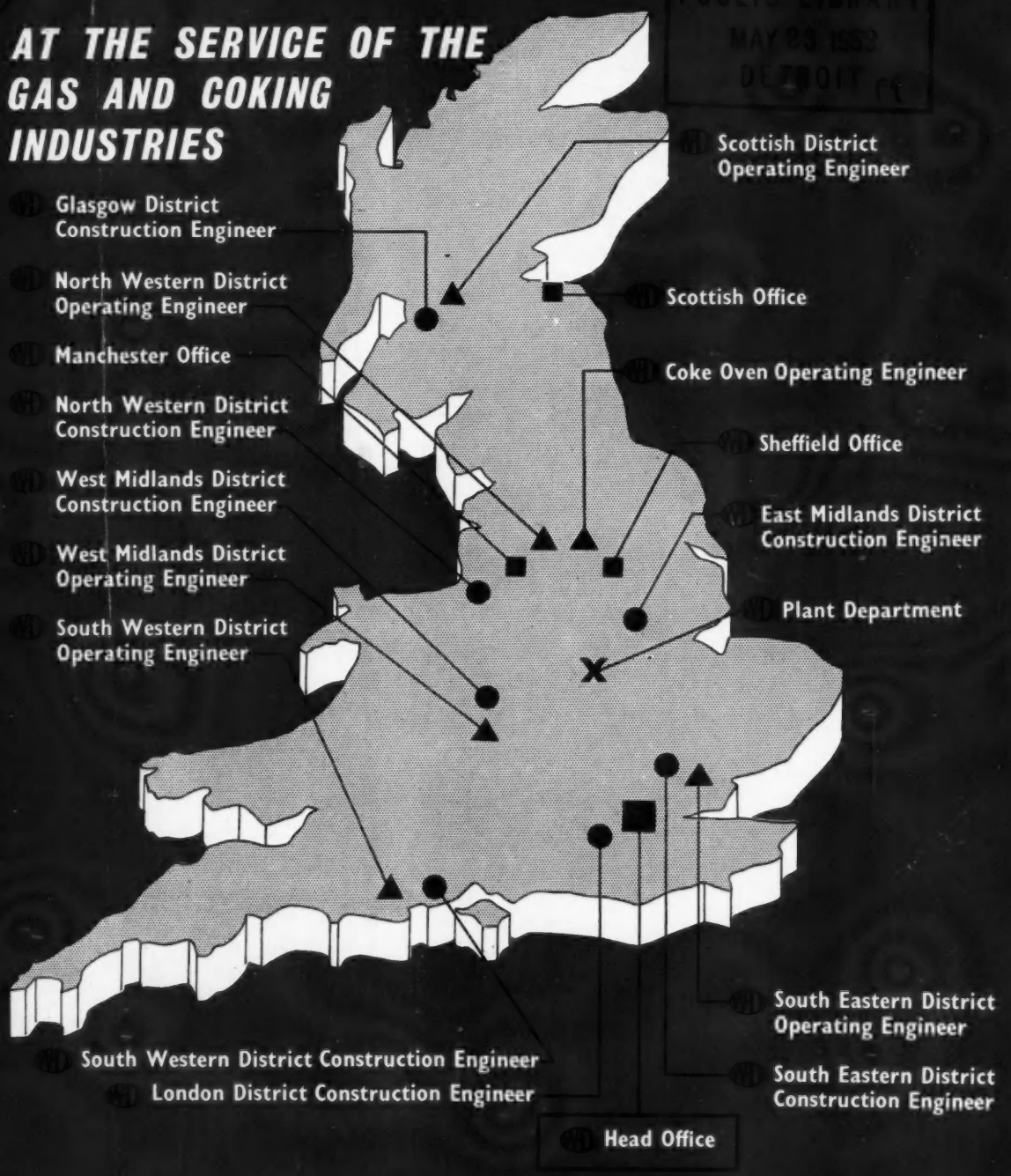

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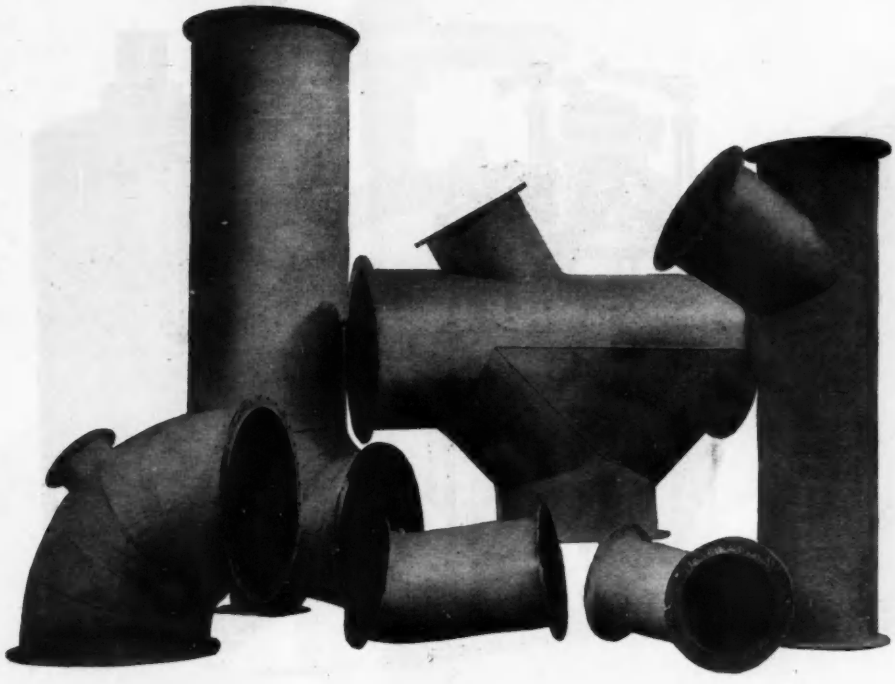

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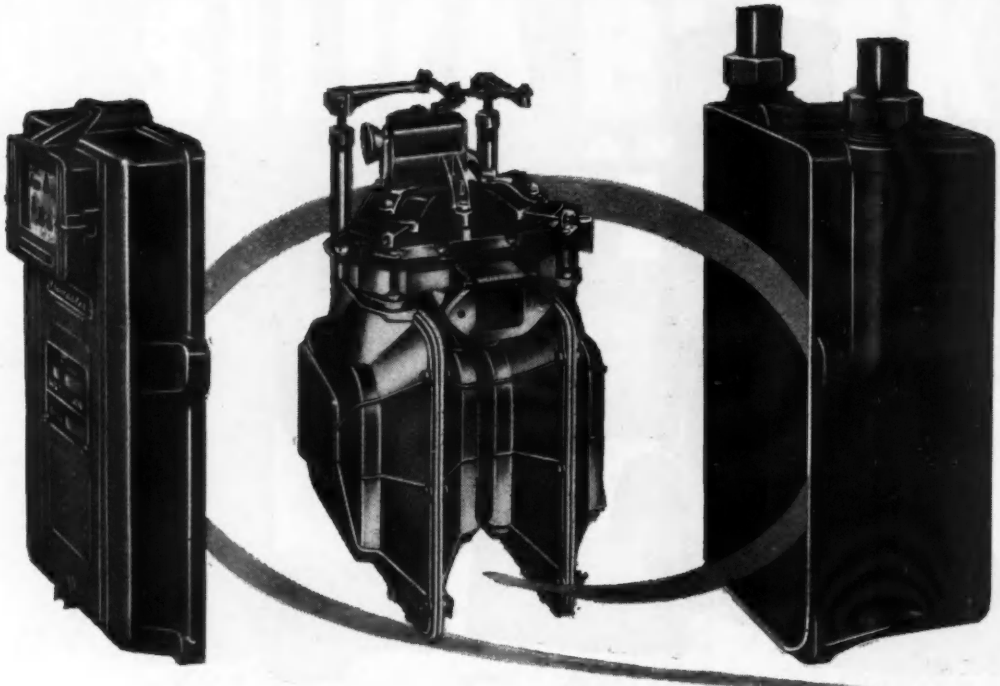

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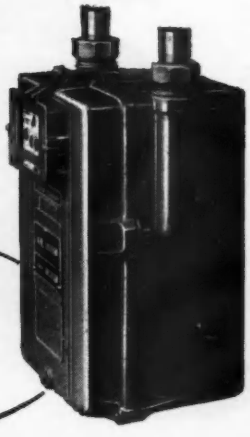

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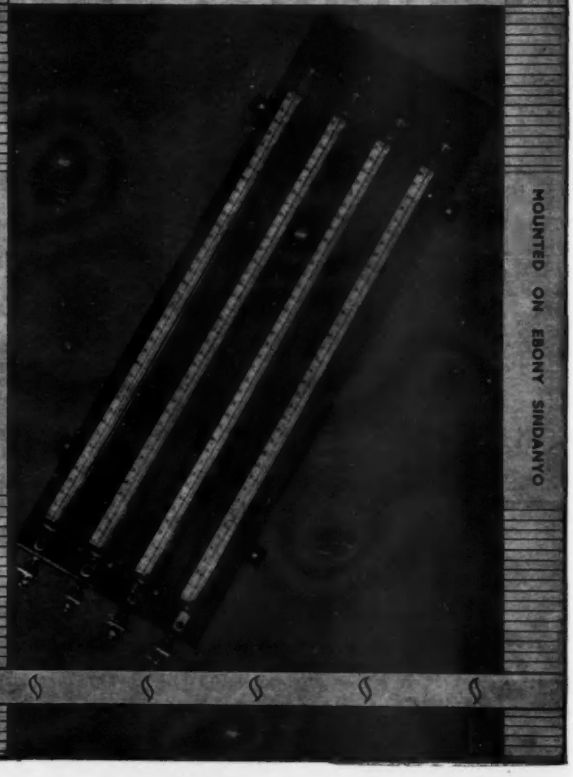

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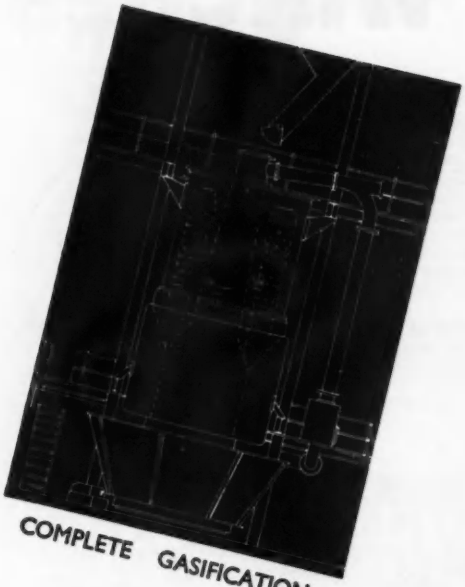

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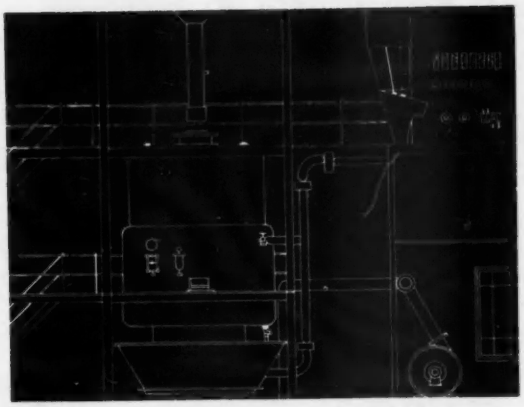
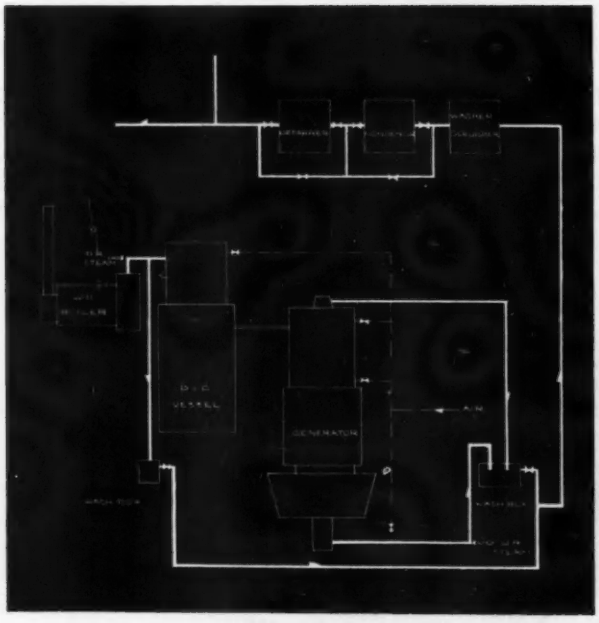
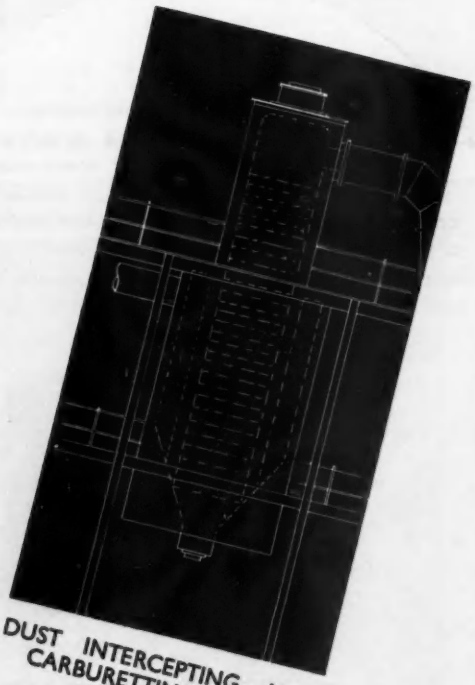


CARBURETTED WATER GAS



FLOW DIAGRAM



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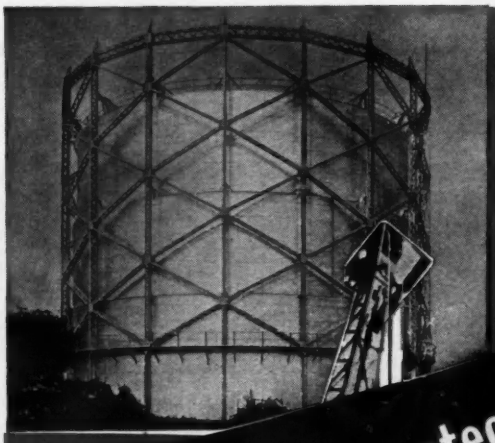
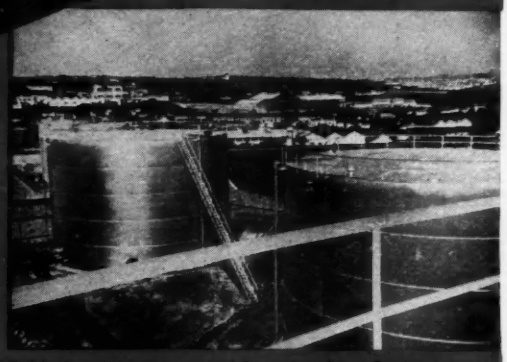


Gasholder in Kent showing brilliance of Atlas Ruskilla Aluminium Paint.

For the protection of metal structures



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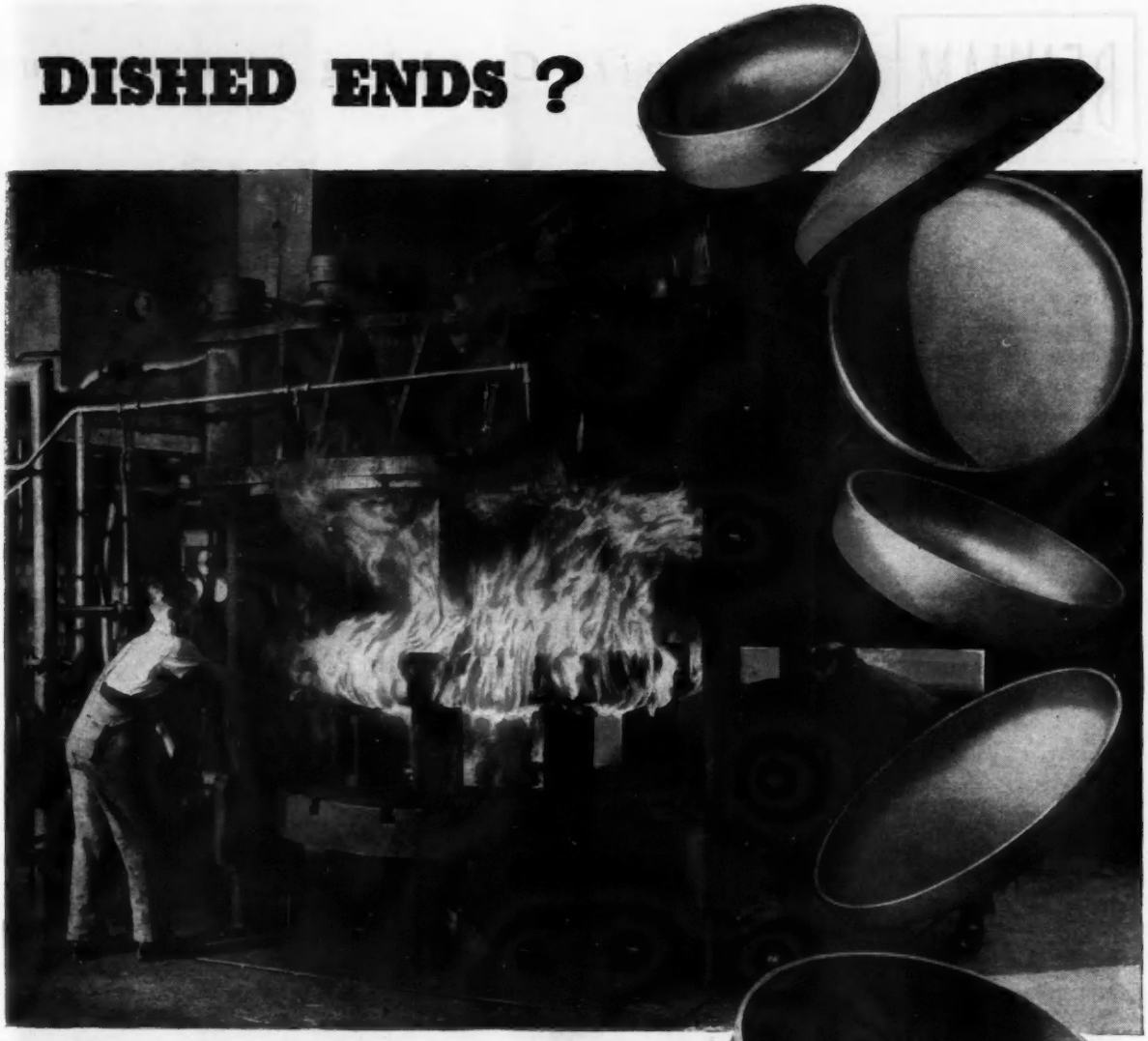

OUT of the furnace and into the press goes the partially finished end . . . up comes the powerful press ring to form the required flange . . . and another Dished and Flanged End is ready.

Furnace and press capacity is available at Harvey's Greenwich works for the pressing of both light and heavy Dished and Flanged Ends. Diameters range from 6' to 9' 0", edges can be prepared for either welding or riveting. Manufacturers providing their own metal can obtain prompt delivery of ends to specification. For details and tables showing dimensions available, send for List GJ 790.

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One or more units of the popular "Solid-top" gas range may be joined together to form wall or central pattern fittings. Deep fat fryers, bain maries, hot closets, grills and working tables may also be incorporated if required, thus providing at an economical cost a composite gas fitting worthy of a place in the kitchen.

UNIT-CONSTRUCTION
Eight-unit fitting illustrated comprises six "Solid-top" gas range units and two gas deep-fat fryer units.

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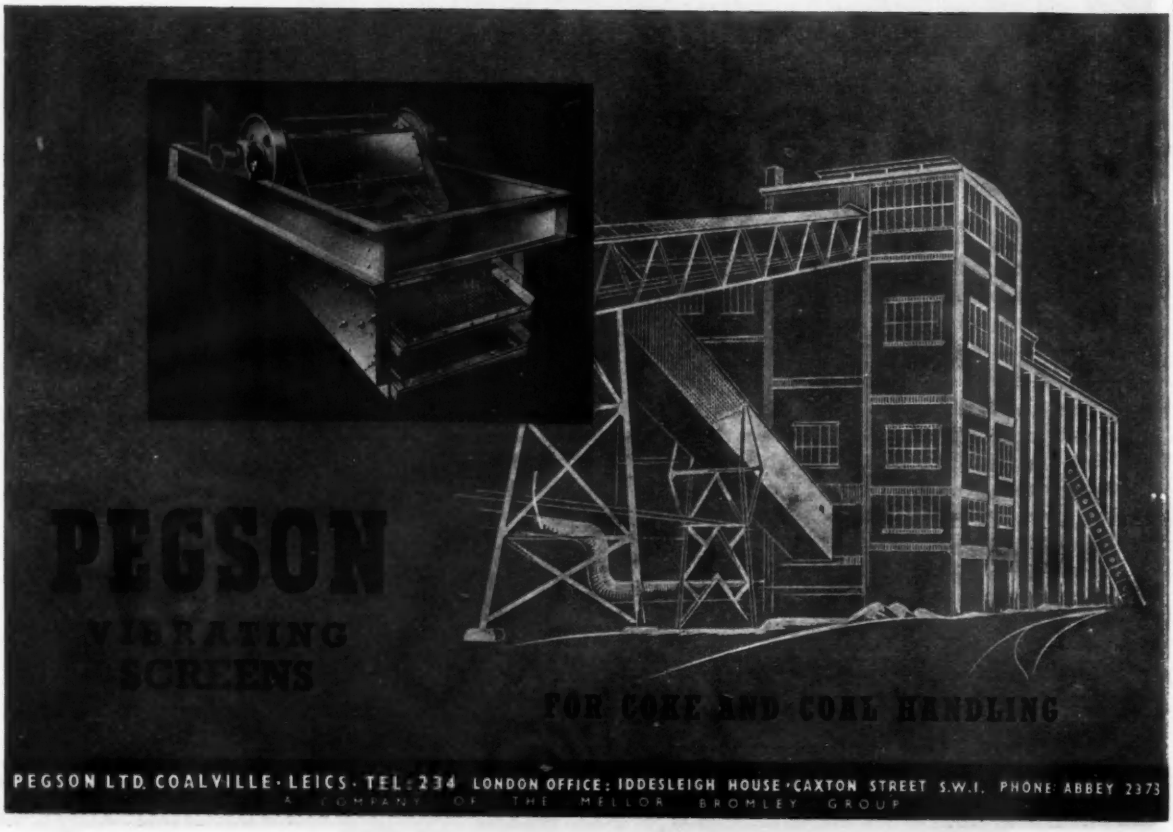
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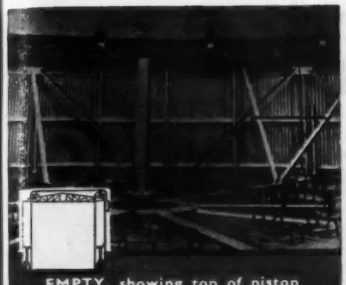
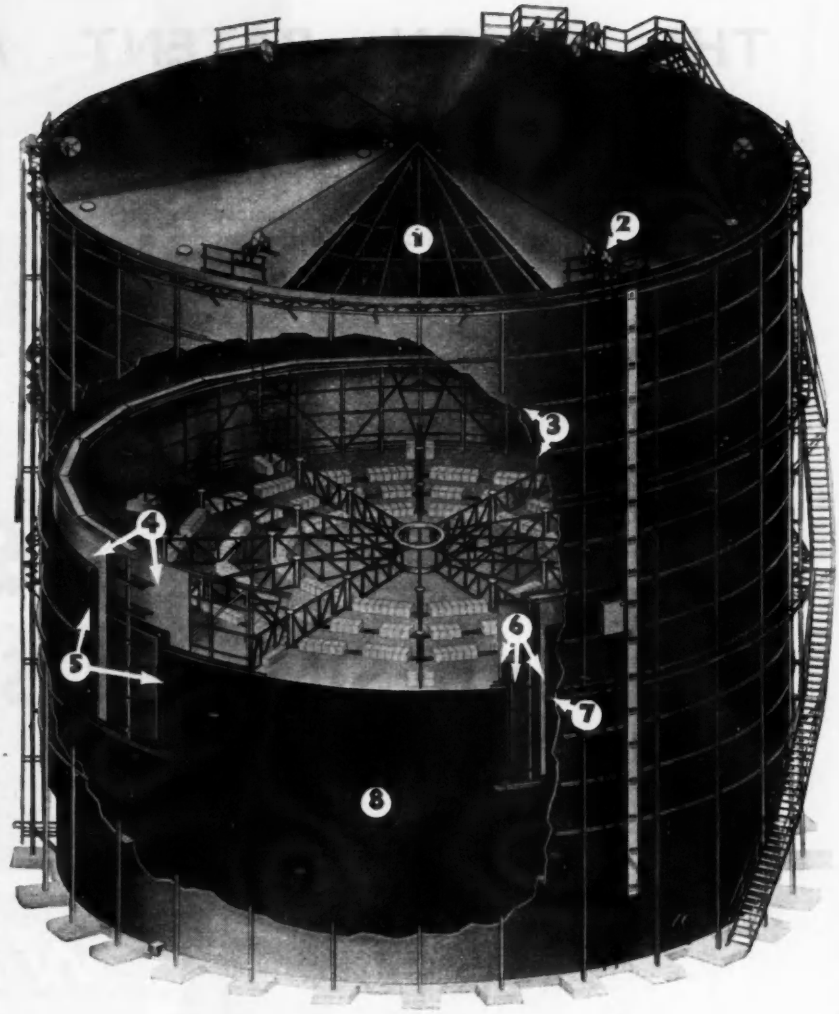


EMPTY, showing top of piston and corrugated fender. Note weights on top of piston to regulate pressure

HALF FULL position, showing inflated seal constructed of a synthetic rubber coated fabric

FULL position, view of mechanically operated relief valve. Releases gas if holder capacity is exceeded



Features of the WIGGINS Dry Seal Gasholder

The Wiggins Gasholder operates on the principle of piston displacement. A frictionless, movable piston floats on the confined gas, rising and falling with changes in volume. The seal—a synthetic rubber-coated fabric—is protected against wear by ample clearances. The system requires practically no maintenance and no replacements. The Wiggins Gasholder is a structure free of unsightly framework.

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2 A single automatic levelling device keeps the piston riding level.

3 The section of the shell above the piston is completely ventilated.

4 Wide clearances prevent friction.

5 The gas-tight seal remains unaffected by weather.

6 Fenders protect the seal when under pressure and guide it on to the side walls without friction.

7 The shell is gas-tight up to the seal connection.

8 Foundations are simple and inexpensive as only the shell weight has to be supported.

Wiggins

DRY SEAL GASHOLDER

Wiggins Gasholders are being used for the storage of hydrogen, nitrogen, towns gas, carbon monoxide, carbon dioxide, oxygen, coke oven gas, tetrafluorethelyne and sewage digester gas, etc.

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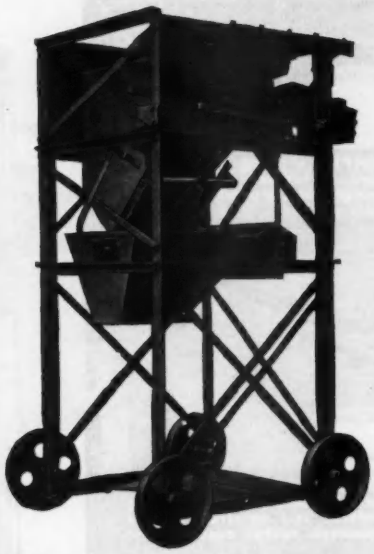

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Machines may be seen working by appointment.

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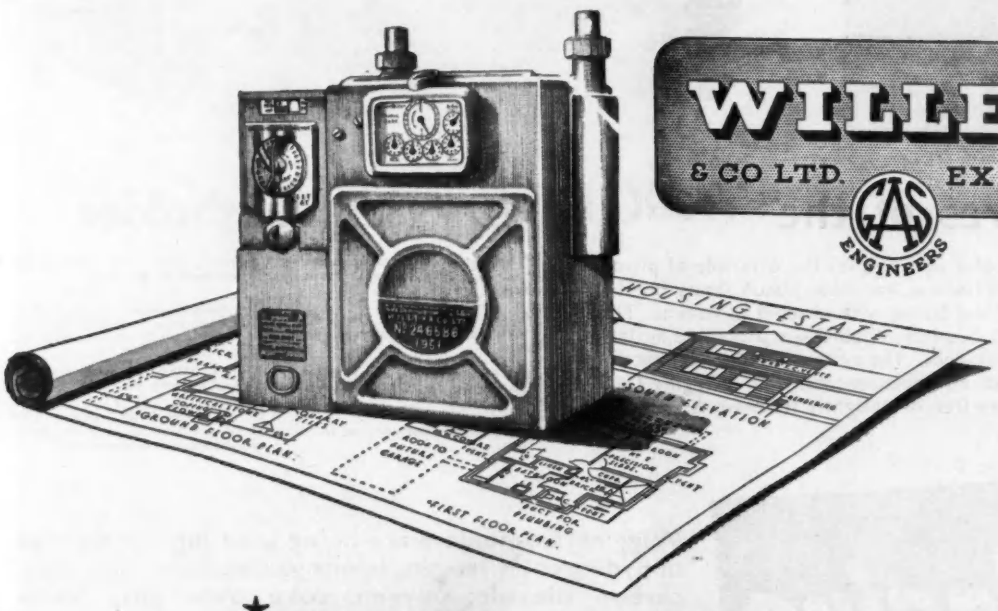

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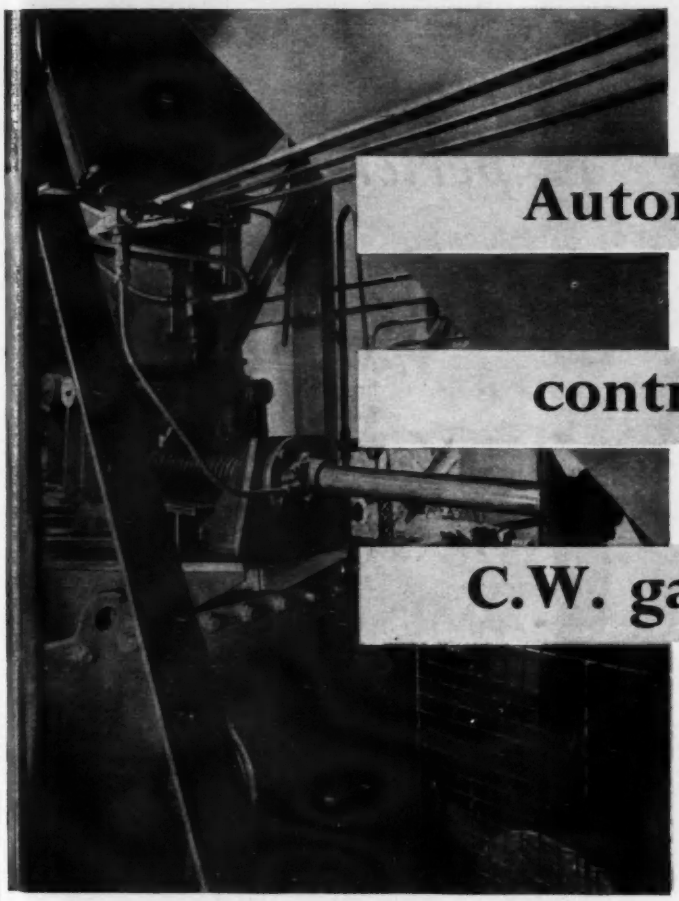

Automatic control of C.W. gas plant

Lockheed high-duty cylinder and interlock control.

Lockheed hydraulic equipment for actuating C.W. gas plant is being used to a rapidly increasing extent.

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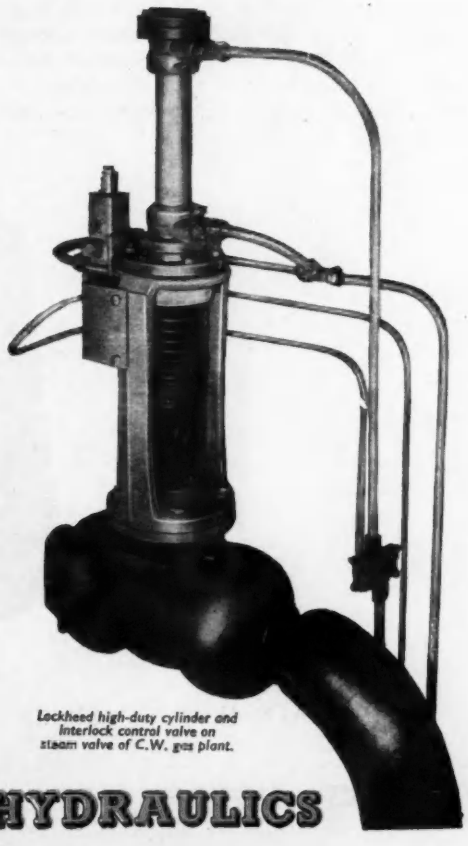

Lockheed high-duty cylinder and interlock control valve on steam valve of C.W. gas plant.

Lockheed

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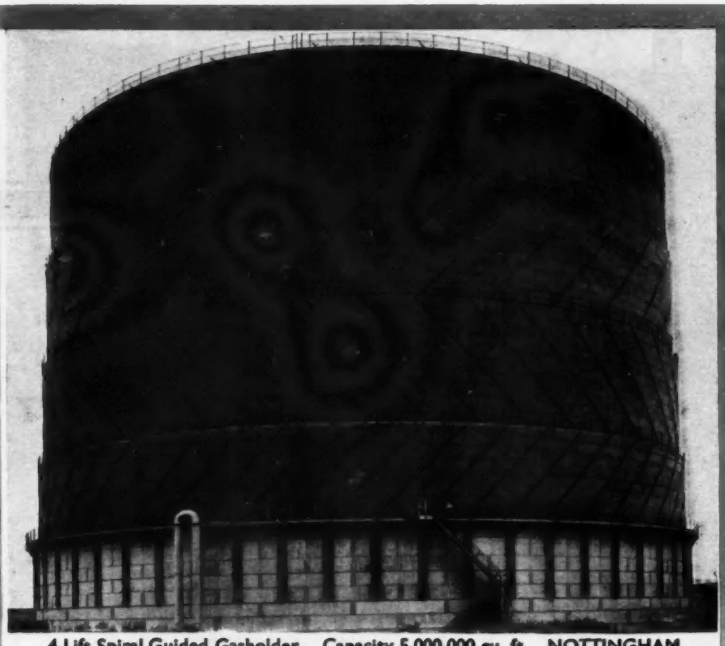

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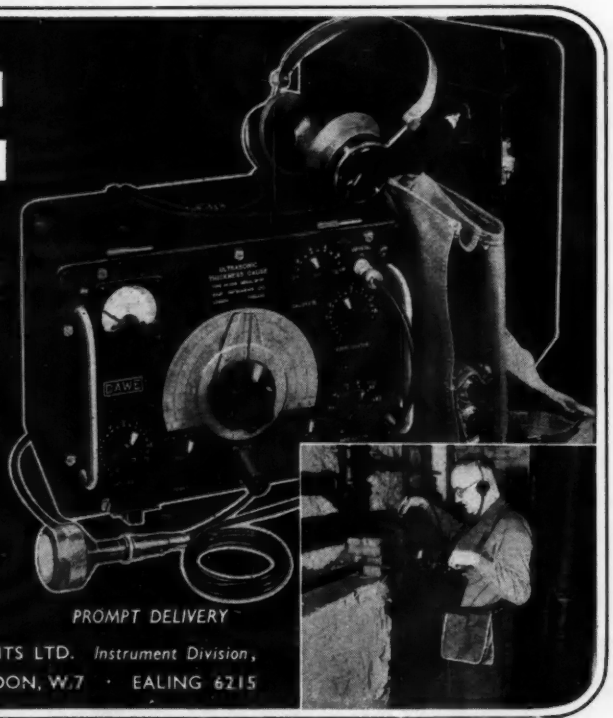

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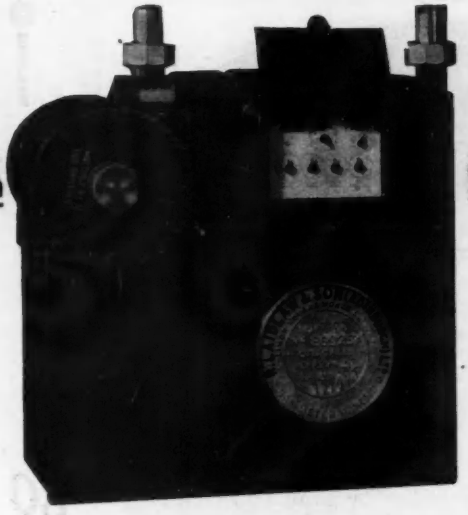

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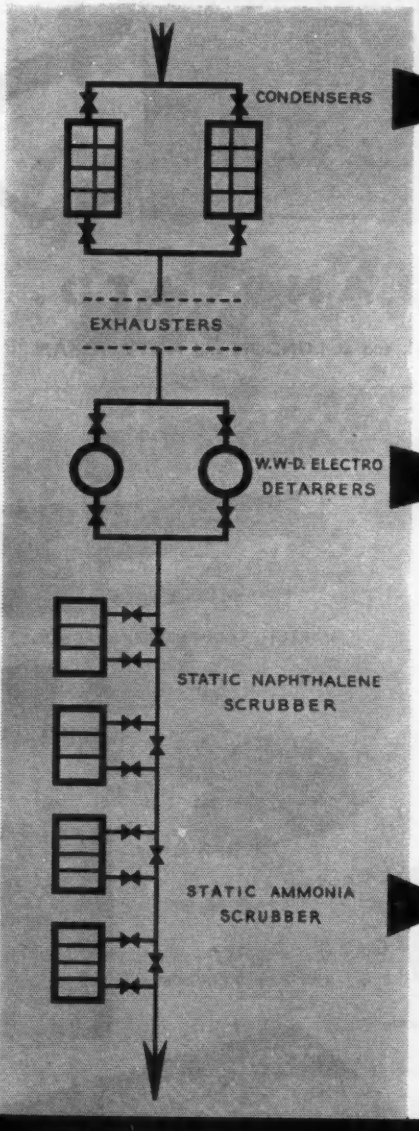

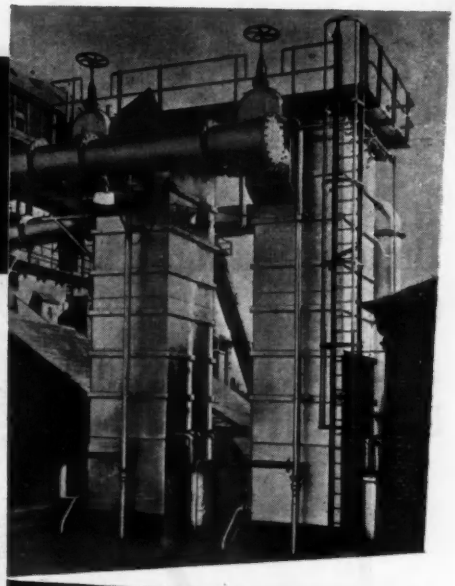

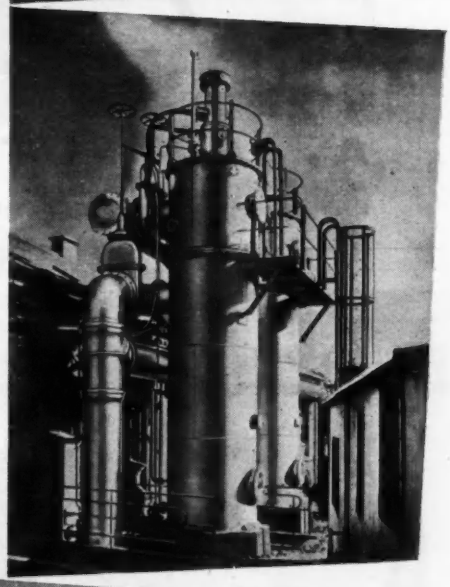

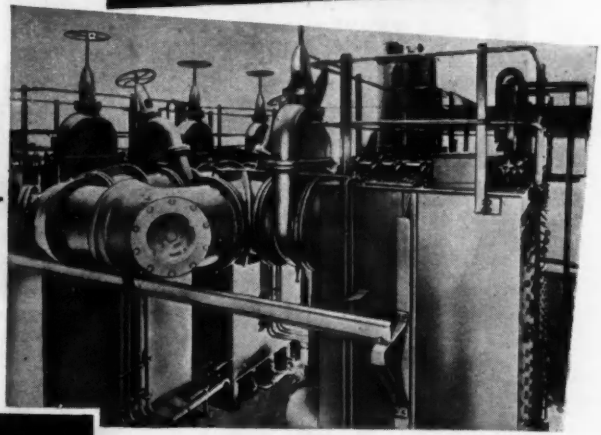

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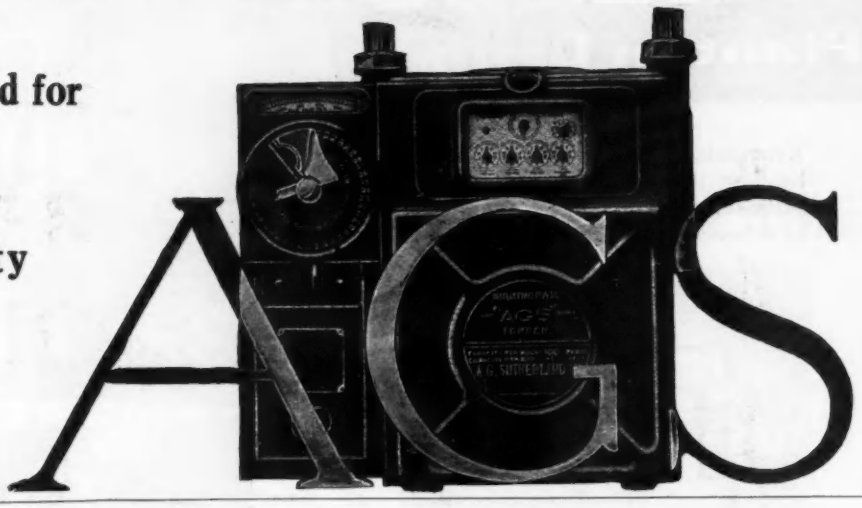

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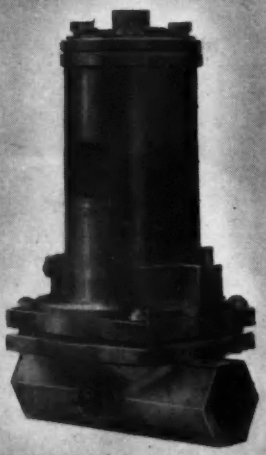

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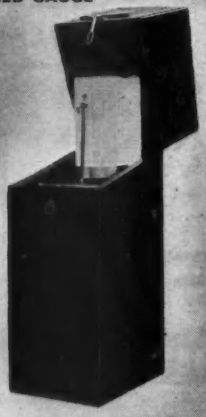

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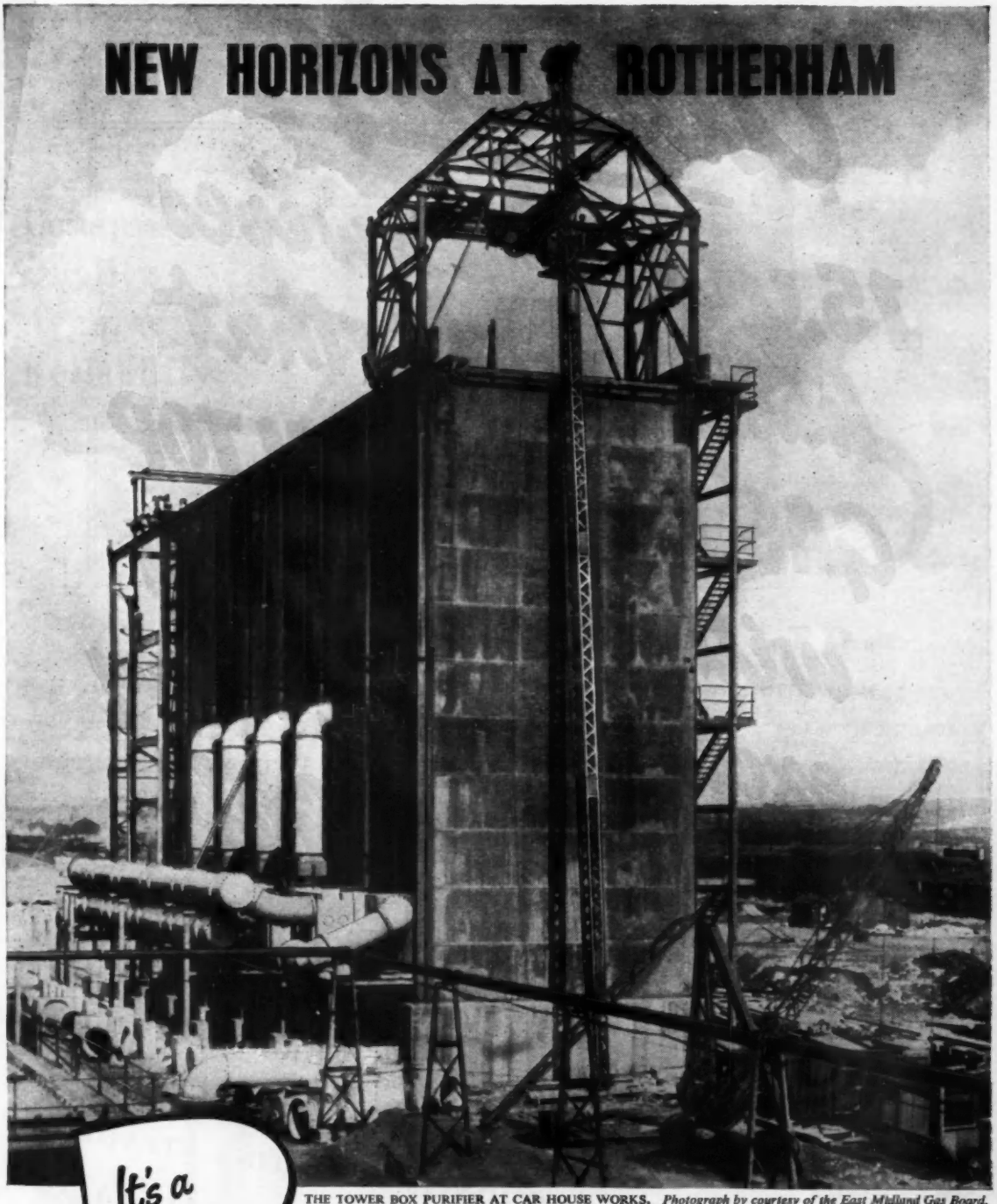

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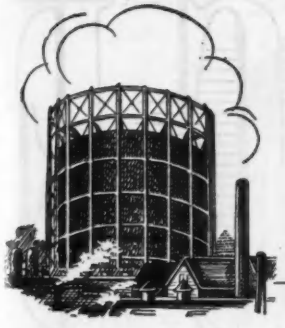

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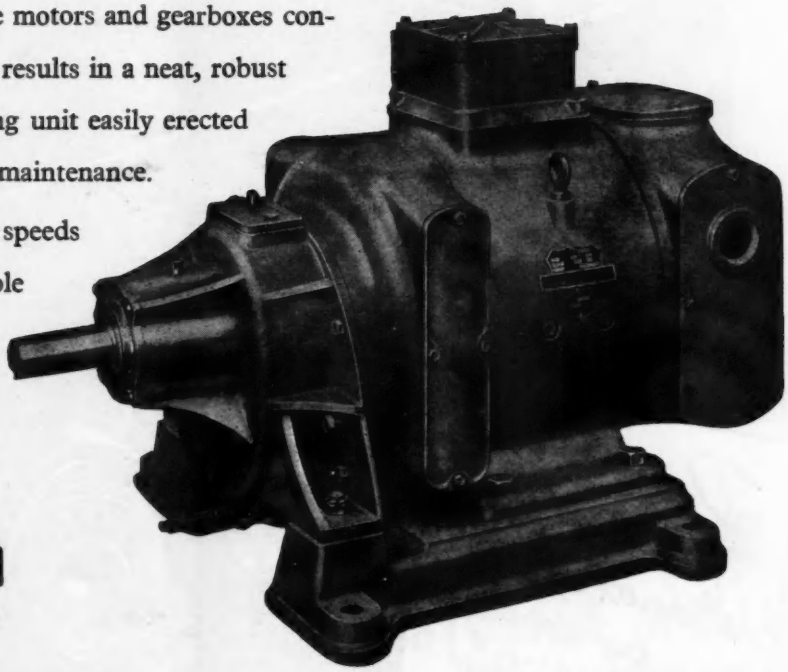

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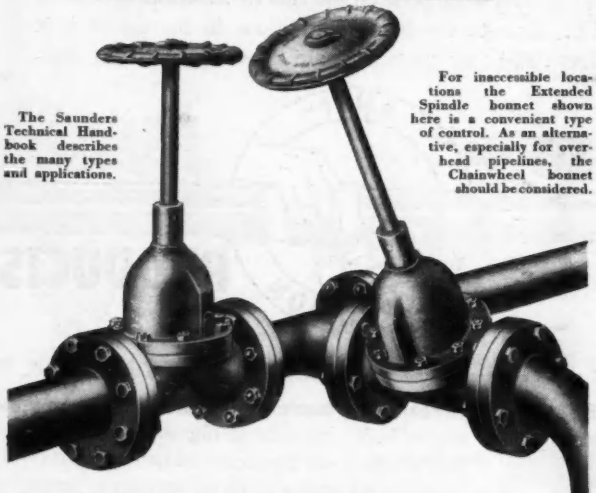

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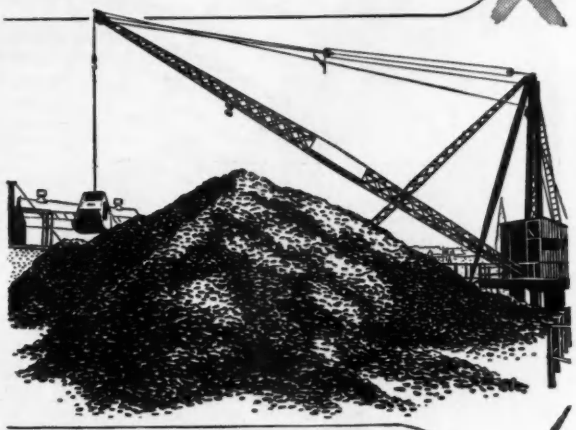

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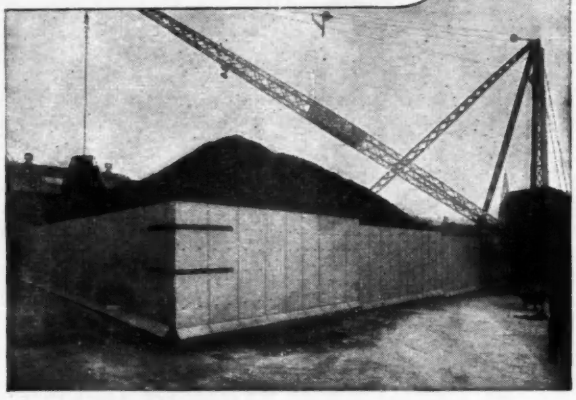

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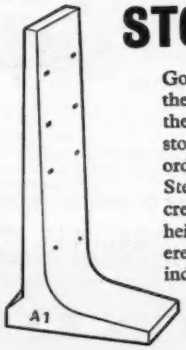

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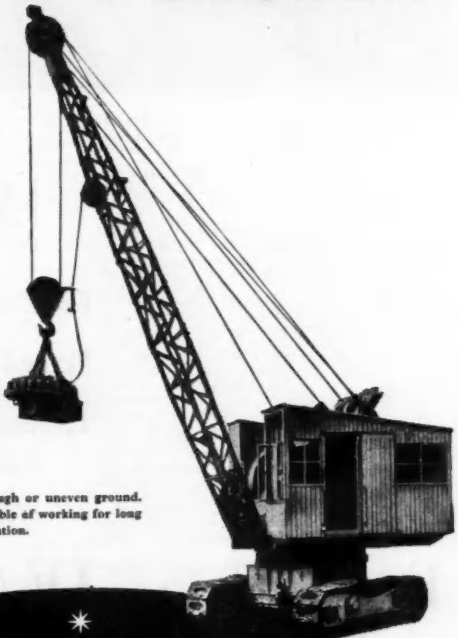

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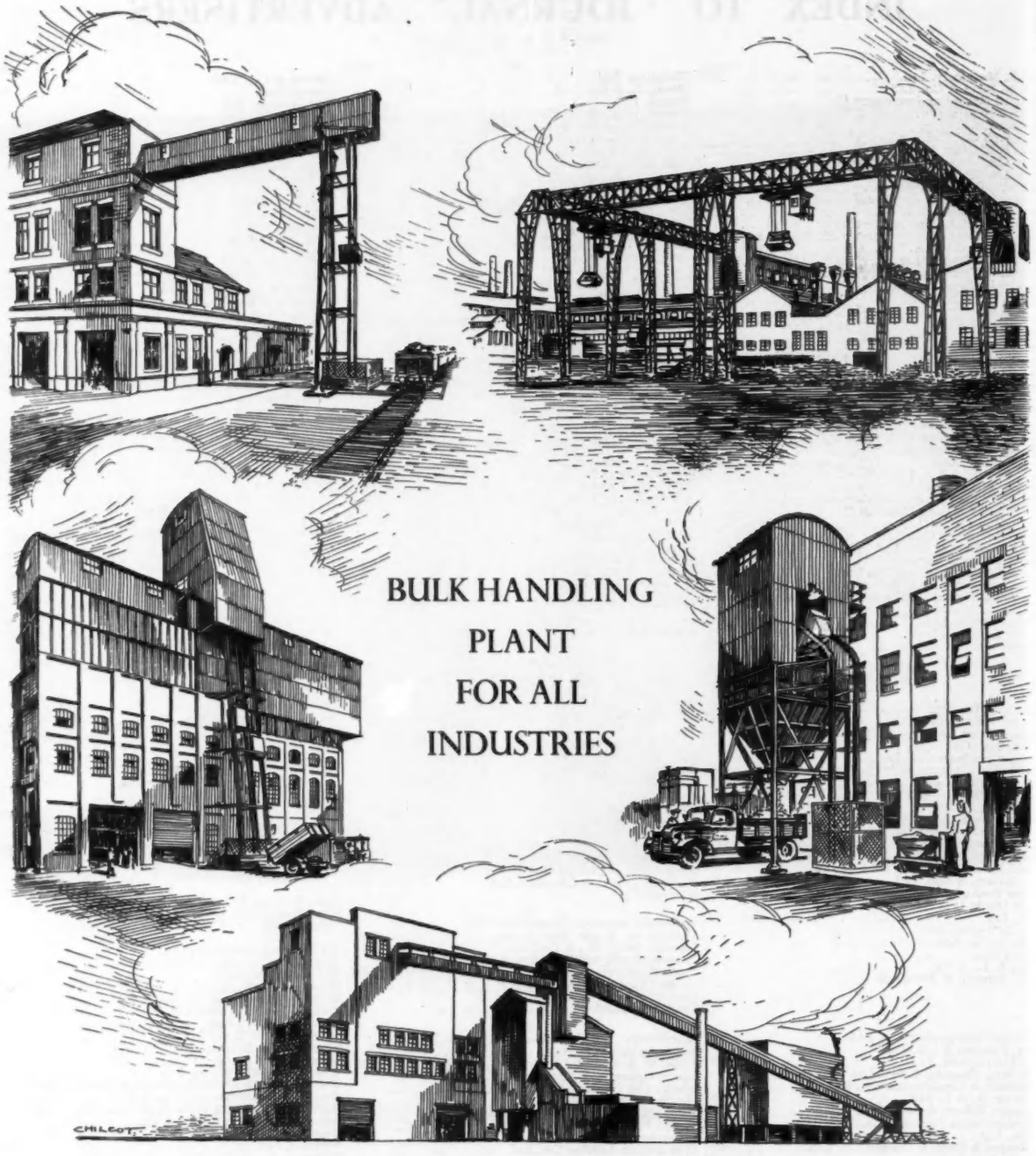

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105th YEAR OF PUBLICATION

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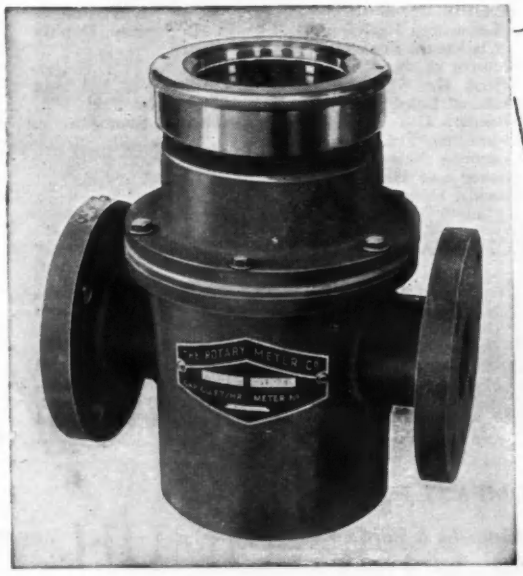

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GAS JOURNAL

VOL. 274. No. 4693 105TH YEAR May 13, 1953

INTEGRATION IN THE NORTH WEST

DEVELOPMENT and co-ordination in the North Western area has assumed a pattern not unlike that in Scotland but with some features of its own. Generally, groups have been formed round nuclei provided by the larger undertakings but the groups have been themselves interconnected or interconnection is projected. In his address to the Manchester and District Section of the Institution, Mr. A. K. Collinge, the newly installed Chairman, described the organisation of the Preston Group in which the undertakings of Chorley, Leyland, and Garstang are, or are to be, integrated with the parent undertaking at Preston itself. His address was published in the *Gas Journal* last week. Mr. Collinge set out the plant already existing and the plans for ultimate concentration of manufacture at Lostock Hall. The picture which he presented is typical of what is going on in the 17 groups into which the North Western area has been divided.

The area served by the Group extends over 250 square miles around the upstream end of the estuary of the Ribble from the village of Garstang 11 miles to the north, to Chorley some nine miles to the south, with Leyland between it and Preston. There are gasworks at all these places with by far the largest at Preston.

Mr. Collinge has himself seen the removal of Preston's works from the town to the Lostock Hall site some three miles to the south. Here a start was made with 10 settings of Drakes continuous verticals in 1931, since extended, and augmented by carburetted water gas plant to an available daily capacity of 9½ mill. cu. ft. There are adequate road and rail communications and presumably plenty of room for expansion. On the other hand, the works at Chorley and Leyland are both near the centre of the respective towns and both without railway connections. Chorley's capacity is about 2 mill. in five settings of Glover-West continuous verticals and Leyland's 1¼ mill. in horizontals. Garstang has a negligible capacity in hand-charged horizontals.

Roughly the programme in the immediate future is to keep all the three smaller plants in repair and operation pending the concentration at Lostock Hall. Garstang and Leyland are already connected with the parent undertaking, and the Preston-Leyland main will be extended to Chorley. It is significant that the Preston-Leyland-Chorley main has been planned as a section of the Board's future grid system into which Lostock Hall works will put gas at pressures up to 20 lb. per sq. in. In the meantime steps were taken to install plant at Lostock Hall to replace the existing outlying installations.

There was obviously no time to spare. Over and above the normal growth large-scale industrial developments in the Leyland district would require considerable volumes of gas. One of the advantages of nationalisation was that the Gas Council was able to transfer to Preston a plant ordered for another area upon which work had not been commenced. Probably that fortunate circumstance had something to do with the decision to change over to intermittent verticals with water-gas dilution to 450 B.Th.U. per cu. ft. It would be interesting to know whether there was any other reason, for one cannot think that the coke market in the North West is such as to influence a decision to any marked extent. The projected plant by Gas Chambers and Coke Ovens, Ltd., was briefly described by Mr. Collinge.

Local distribution varied considerably over the area. Mr. Collinge himself, serving one of the most progressive company undertakings in the country, first as the able assistant of Mr. Tagg and latterly in sole control, had seen to it that the position in Preston itself was thoroughly sound. But conditions were not so happy in the other townships. In one of those witty asides of his, he remarked that in one town such was the diversity of prepayment meters that sometimes the collector carried more in keys than in cash. All that is now being put right.

Sales and services are also being re-organised on a group basis with suitable specialisation in the personnel. Several of Mr. Collinge's incidental observations are worthy of note. Personal contact with consumers has already resulted in effecting 56% of the sales of domestic appliances, 'although we have nine adequate and attrac-

tive showrooms.' Nothing does so much harm to the reputation of gas as inefficient appliances in being. The domestic appliance maintenance scheme, already 20 years old in Preston itself, is being extended over the Group, at a net cost of no more than a third of a penny per therm sold for domestic purposes. Preston and Leyland districts contain many important industrial undertakings, engaged in the manufacture of, among other things, motor vehicles, aircraft, and electric lamps. These are good customers for gas, while in the commercial field it is refreshing to learn that space heating is absorbing large numbers of the very convenient and efficient overhead heaters. Sales to industrial and commercial consumers has risen rapidly to 33% of total sales. We shall not follow Mr. Collinge's description of the system of administration and acountancy which has been evolved for the Group. It was obvious that it met with the approval of his audience.

Finally, the Chairman turned to some reflections on the problems today before industry in general and the gas industry in particular. The North West area is going through something of a financial crisis. It may not be generally realised in the country that in this vast, congested, and old-established industrial region, gas has been pushed very hard. Installations had no doubt been over-strained, and when the new régime took over there was much renovation to be done. The concentration of manufacture at big stations, the provision of interlinking mains, is very costly involving heavy expenditure which cannot be remunerative for a considerable time. But there is not the slightest doubt of the wisdom of the developments which have been and will be embarked upon and that eventually the harvest will be reaped.

And all will agree, too, that the condition for success in operation is to regard the industry as ' a joint enterprise dependent upon the efforts of both management and labour, and ' (we like this passage) ' this requires not merely an absence of differences but active co-operation.' Mr. Collinge went on to review steps taken to bring this happy state of things to pass. Everyone who has watched the career of Mr. Collinge at Preston will wish him further success in the future and particularly a happy year of office as Chairman of the Manchester and District Section covering as it does the vast industrial districts of Lancashire and Yorkshire.

PURIFICATION, WET AND DRY

PROBABLY nationalisation has meant less change in the North Thames area than in any other part of Great Britain—one thing the gas industry can be thankful for. The North Thames Gas Board has kept up the generous and enlightened policy of its great predecessor in placing at the service of the industry as a whole the results of its incomparable research and of its wide experience in gasworks practice on the great scale. Its latest publication ' The Cooling, Washing, and Purification of Coal Gas ' by G. U. Hopton, its Senior Research Chemist, is not only a compendium of several previous valuable papers contributed by its author to the proceedings of London gas engineering associations; it summarises in a convenient form most of what has recently appeared anywhere on gas purification, wet and dry, most of which has now passed into practice in the London gasworks. We are not aware that this has been done before, at any rate for modern practice.

The book opens with a brief account of the impurities which occur in crude coal gas and a diagrammatic layout of a complete purification plant, perhaps not of a ' typical ' gasworks but of a fully equipped large modern one. Both primary and secondary condensers are not yet, we suggest, typical practice. On the other hand hot gas electro-detarrers have been widely recommended in addition to cold gas detarrers in the position shown. Further work on effluent treatment may confirm that this would be good practice. But several variations are described and two detarrers are shown in two of them. A useful section is that on preliminary treatment of crude gas particularly by spraying at outlet from retorts. In some successful layouts hot liquor has been returned from a tank in the retort house. Mr. Hopton remarks that tar circulation is sometimes practised ' but is not to be recommended in general.' It was once thought necessary for vertical retorts treating Durham coals, but we believe that this view is not now held.

The treatment of the subject of condensation opens with a discussion of the theory with as much mathematics as most gas engineers can stand and then proceeds to a description of the several types of condenser in use. It is interesting to note that the atmospheric condenser keeps its place, with certain advantages which may assert their value when water supply is difficult. That such may often be the case is evidenced by the allocation of a complete section of the book to the supply of cooling water and the design of water cooling devices. The low grade heat in the condenser water is not readily available for process work except to a small extent in the heating of boiler feed water.

The three types of exhauster are discussed briefly. The Beale-type rotary seems to be going out of use, its place being taken by the Connersville or Roots blower type and in the larger installations by the turbo-exhauster which incidentally may assist in the removal of tar from the gas stream. The rise in gas temperature caused by the gas exhauster has not been generally recognised. It may be as much as 10°F. to 20°F., enough to justify the provision of a secondary condenser. It is curious to note the persistence of the Livesey washer which excites nothing but contempt on the Continent. In some installations the electro-detarrer has been held to render it unnecessary although it is but fair to note that the Livesey has generally been left in as a standby.

RECOVERY OF AMMONIA

THE recovery of ammonia by washing is thoroughly discussed in the publication to which we have referred. It is a pity, but true, that the manufacture of sulphate, at any rate in the gasworks, has practically disappeared. The best we can do is to concentrate the liquor—that is, reduce its water content to the limit—and hand it over to the chemical manufacturer. The removal of cyanide is briefly reviewed but we gather that its recovery for sale is not a paying proposition although the new W-D. Koppers liquid purifying plant may alter this position.

It is when we come to the sections on oxide purification and the design of purifiers that we realise the value of the very complete bibliography appended to the book. To these references however should be added the very valuable paper, Comm. No. 407 (Institution of Gas Engineers) by Dr. Hollings and that of Dr. Moignard, 'The Performance of Oxide Purifiers, Comm. GC7, presented to the Institution last autumn. The use of specially prepared oxides of definite composition has been better discussed in another paper by Mr. Hopton. Indeed the very fine paper which he presented to the Eastern District of the Southern Association of Gas Engineers in March, 1948 (*Gas Journal*, Vol. 254, pp. 100 and 158) is by far the best treatise on oxide purification that we have seen. As we wrote then, 'The difficulty with the use of any naturally occurring material such as bog-ore . . . is that its composition may be so complex and so liable to vary as between one part of the deposit and another, that it demands constant vigilance in "control" to make certain that you are always getting what you think you are getting.' For the liquid processes Dr. Hollings' Comm. No. 407, is a better reference, though this summary is also useful.

Naphthalene removal is sometimes necessary. The remark is made that it is advisable to wash this troublesome impurity out at an early stage; at the inlet of the secondary condensers is a point suggested. Reverting to the hot-gas electro-detarrer, one wonders whether trouble with naphthalene, experienced in one instance, has been generally experienced with this practice. Benzole recovery by oil washing and by activated carbon is fully discussed. It is linked up with the removal of organic sulphur, a practice which one still hopes will be generally adopted. It is recommended that the gas drier, when installed, should be placed after storage, surely a reasonable recommendation. And the book concludes with short sections on gum formation, its cause and cure, and finally bacterial contamination of gas in the holder.

The book is well printed and easily readable. We cannot, we regret, say the same of the illustrations. For the most part the various plants are shown in isometric drawings; possibly, if these could have been larger, which the scale of the book prohibits, they would have been more intelligible. In spite of this blemish the book will take an honourable place on the shelves of the gas engineer.

Personal

Mr. A. Spencer, district foreman at Barnoldswick gas undertaking, was presented, on his retirement, with a wrist watch in recognition of his 40 years' service.

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The **Hon. D. E. Hely-Hutchinson,** of Bath, has been appointed by the Minister of Fuel and Power to be a part-time member of the South Western Gas Board.

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Mr. Harry Friedman having resigned as sales agent for Master Gas Cookers Ltd., his work will be carried on by **Mr. D. H. Otton,** Sales Director. **Mr. W. J. Higgins** of 135, Woodmansterne Road, Streatham, S.W.16, will continue to represent the company in the Southern and Eastern areas.

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Mr. S. A. King, who since the nationalisation of the gas industry in 1949 has been Sales and Service Manager of the Tottenham Division of the Eastern Gas Board, has been appointed Commercial Manager for the Eastern area. Mr. King is well known in the industry, and is regarded as one of the most progressive of its younger executives. He started as an articled pupil with the old Tottenham and District Gas Company in 1926 when Colonel Sir Harold Smith, Chairman of the Gas Council, was the Company's Chief Engineer. In 1932 Sir Harold appointed him Industrial Sales Manager, a position he occupied with great success until 1945. During those years Tottenham saw a big extension in the use of gas for industrial purposes, and during the war, despite extensive bombing, no factory within the purview of his organisation was without gas for more than half a day. Subsequently for four years he was Sales Manager of the Tottenham Company and conducted a number of highly successful sales campaigns. Mr. King has represented the Eastern area in national discussions on commercial matters, and his work in that sphere has brought a wider appreciation of his ability. After his appointment as Sales and Service Manager at Tottenham he virtually created a new team of district managers, which is now regarded as one of the best and most active sales organisations in the industry.

Mr. J. G. T. Crooks, Works Foreman at the Lowestoft gasworks of the Eastern Gas Board, was one of the 55 recipients of the Queen's Commendation for Brave Conduct whose names were announced in the *London Gazette* on April 28. The commendations, together with a number of other honours, were bestowed in recognition of good service rendered during the East Coast floods early in February of this year.

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EAST MIDLANDS APPOINTMENTS

Development of administration on more functional lines has been contemplated for some time within the Leicester and Northants. Division of the East Midlands Gas Board, and the appointment of **Mr. F. Harvey,** Group Manager, Grimsby, to the position of Deputy Divisional General Manager of the Walsall Division of the West Midlands Gas Board, has made it possible to effect some major changes of staff appointments as from July 1: **Mr. W. A. Pask,** now Sub-divisional Manager, Rutland Sub-division, will take over the appointment of Group Manager, Grimsby; **Mr. J. Corrigan,** now Senior Group Manager, Northampton, will take over the appointment of Divisional Sales and Service Manager, Leicester and Northants. Division; **Mr. J. A. Henry,** now Group Manager, Market Harborough, will take over the appointment of Senior Technical Assistant to the Divisional Engineer, Leicester and Northants. Division; **Mr. C. J. Alsop,** now Technical Assistant, Rushden, will take over the appointment of Works Superintendent, Market Harborough, and be directly responsible to the Divisional Engineer.

Appointments will shortly be made to replace Mr. Corrigan at Northampton and to appoint a District Superintendent at Market Harborough. The position of Sub-divisional Manager, Leicestershire and Rutland, will lapse, and the Sub-division will come under the direct control of the Divisional General Manager.

The retirement is also announced of **Mr. A. Wylie,** Sales and Service Manager, Sheffield No. 1 District, Sheffield and Rotherham Division. Mr. Wylie will retire on May 31 after 38 years service with the gas industry. As from June 1 **Mr. W. J. Steed,** Divisional Sales and Service Manager, Sheffield and Rotherham Division, will take over responsibility for the whole of the Division, including the Sheffield No. 1 District, for which a District Manager will shortly be appointed.

The post of Marketing Officer on the staff of the Commercial Manager has been filled by the appointment of **Mr. J. R. Knott,** Export Manager, Gas Group, Thomas De La Rue and Co., Ltd. Mr. Knott will take up the appointment on July 1.

TAR DISTILLATION AT PLYMOUTH

A MAJOR development in the industrial life of the city of Plymouth saw its start (see last week's *Gas Journal*, p. 314), when the Lord Mayor, Alderman H. E. Wright, inaugurated the new tar works site at Cattedown of Plymouth Tar Distilleries, Ltd., a concern in which the South Western Gas Board and Burts and Harvey, Ltd., have large interests. The Lord Mayor and leading officials of the City Council, together with other distinguished guests representative of the gas and tar distilling industries who had been invited by the Chairman and directors of Plymouth Tar Distilleries, Ltd., toured the site and inspected the present plant. Mr. C. H. Chester, C.B.E., Chairman of Plymouth Tar Distilleries, Ltd., welcomed the Lord Mayor and the city officials and conducted them round the works.

Before unveiling a commemorative tablet set in part of the wall of the new distillation unit house to be erected, the Lord Mayor said he was very pleased that the Board had decided to build that new installation—the centre of tar distilling west of Exeter—at Plymouth, because the city was still short of adequate industry to absorb all those people who were available for employment. It was essential in these days that waste should be eliminated, and the new plant, with its greater efficiency, would do that. When the Lord Mayor drew aside the Union Jack which covered the commemorative tablet blasts were blown on steam whistles, sirens were sounded, and workmen who lined one side of the almost square site, hewn from the solid cliffs of limestone which tower above it, raised cheers.

Mr. Chester then led the company a short distance away to a spot where a Japanese flowering cherry tree had been prepared for planting by him. In planting the tree with a new spade which gleamed like silver, Mr. Chester remarked that Plymouth Tar Distilleries, Ltd., were going to try to beautify the site, and he asked the Lord Mayor to accept the planting of the flowering cherry as a symbol of their desire to be good neighbours to the city.

At a luncheon at the Grand Hotel on Plymouth Hoe which followed the inauguration ceremony, Mr. Chester, who presided, said Plymouth Tar Distilleries, Ltd., was a fine combination of private enterprise and nationalisation. It was a complete business organisation, with the consumer's interest at heart, and quite human. Plymouth would now have a factory of which, he hoped, it would be proud. Mr. Chester then announced that the Board had now received permission to build new showrooms and offices in the city. These were to be situated alongside the Union Street roundabout, and work on them was to be started shortly. The first step in the reconstruction scheme at Cattedown was the acquisition from the Esso Petroleum Company of land adjoining the existing works, and it was upon this that it was intended to build the plant for the distillation of tar to its primary products. This would necessitate large-scale demolition of the present works. It was planned to complete the first stage of development in 1954, and it was expected that the plant would take about two years to finish.

In replying to the toast of the City of Plymouth proposed by Mr. Chester the LORD MAYOR said they were all looking forward to the provision of efficient gas headquarters in Plymouth.

The Chairman, on behalf of Plymouth Tar Distilleries, Ltd., presented the Lord Mayor with a silver salver as a memento of the occasion.

The toast of the guests was proposed by Captain W. Harriss, who emphasised that it was the wish of Plymouth Tar Distilleries, Ltd., to be accepted as an integral part of the industrial life of Plymouth. He paid a generous tribute to the great co-operation which the company had received from civic leaders and officials in helping them to overcome many administrative difficulties.

The toast was responded to by Mr. H. H. BATES, Managing Director of the National Benzole Co., Ltd., who praised the progress which was everywhere evident in Plymouth.

Summer Coal Prices

FOLLOWING THE PRACTICE of the past three years, the National Coal Board and the coal distributors arranged for summer prices for house coal to be introduced as from Friday, May 1. In northern regions, the difference between the lowest summer and highest winter price will be 10s. a ton; the summer price will operate until the end of October. In London and the southern regions, as last year, the reduction in present retail prices is 10s. a ton, operative to June 15; 7s. 6d. a ton from June 16 to August 31; and 5s. a ton from September 1 to November 30.

Orders placed with coal merchants in London and the south before August 31, and delivered before October 31, will be charged at the price ruling at the time of ordering, providing no special conditions about the date of delivery or precise quality are attached to the order by the householder. Orders placed after August 31 in the south and at all times in the north will be charged at the price ruling on the day of delivery. Coal merchants have to share available supplies fairly among householders and to build up coal stocks in the summer against winter demands. The acceptance of an order for the full permitted quantity does not therefore bind a merchant to deliver that quantity.

Drakes, Ltd. (Halifax) football team won the Boothtown A.F.C. Workshops Competition on April 29, at the Boothtown ground, and were awarded the Jack Standeven Trophy. They played Oldfield and Schofield, and Gledhills combination, and won 2-0. Throughout the competition they scored 15 goals and only had one goal scored against them.

Humphreys and Glasgow, Ltd., who for some 25 years have designed and installed handling plant in conjunction with their water gas plants, are now extending their activities in this respect to all industries where their developments are applicable.

Diary

May 15.—Wales G.C.C.: County Hall, Llandrindod Wells, 2 p.m.

May 16.—Scottish (Eastern) Juniors: Golf Outing, Aberdour.

May 16.—London Juniors: Tour of North Thames Gas Board's Beckton Trunk Mains System and Westminster Control Room, 2.0 p.m.

May 18.—Eastern G.C.C.: Meeting in committee to discuss Fabian Society Report on Consumer Councils, 11 a.m.; Ordinary meeting, 2 p.m., Connaught Rooms, Kingsway, W.C.2.

May 19.—Gas Officers' Guild: Annual General Meeting, Bishop Partridge Hall, Church House, Westminster, 4.45 p.m.

May 19-22.—Institution of Gas Engineers: 90th Annual General Meeting, Church House, Westminster. (For detailed programme, see p. 254, *Journal*, April 29.)

May 27.—South Western Section, I.G.E.: 'Some Attempts Made to Reduce the Cost of Gas Production,' J. E. Wilkes and J. A. Bell. Taunton.

May 28.—East Midlands Sales and Service Circle (Sheffield and Rotherham Division): Visit to Rainhill Works of Stoves, Ltd.

May 28.—North Thames G.C.C.: Westminster City Hall, Charing Cross Road, W.C.2, 2.30 p.m.

May 29.—Scottish Juniors: Joint Visit to Whessoe, Ltd., and to the new factory of Paton & Baldwins, Ltd., Darlington.

May 29.—London Juniors: Anunal General Meeting, Lecture Theatre, 178/180, Edgware Road, W.2, 6.30 p.m.

May 30.—Western Juniors: Visit to Stapleton Road Works. 'Fluids Handling on Gasworks,' J. Parker. Bristol.

June 6.—Scottish (Eastern) Juniors: Annual Outing. Galashiels.

June 6.—Scottish (Western) Juniors: Ladies Day: Visit to Loch Katrine and Royal Lodge.

June 8.—South Eastern G.C.C.: Caxton Hall, Caxton Street, Westminster, S.W.1. 2.15 p.m.

June 8.—National and Local Government Officers' Association (Nalgo): Meeting of Gas Staffs, Llandudno, 9.30 a.m.

June 9-12.—National and Local Government Officers' Association (Nalgo): Conference, Pier Pavilion, Llandudno.

June 10.—Southern G.C.C.: Bournemouth, 11 a.m.

June 10.—South Western Gas Consultative Council: Meeting. 34, Bridge Street, Taunton, 11 a.m.

June 11.—Midland Juniors: Ladies' Day, Hereford.

June 15-16.—Eastern Section, I.G.E.: Annual General Meeting. Royal Hotel, Clacton. Chairman's Address, F. A. Rhead. business meeting; 'The Case for the Deep Purifier,' R. Whiting, Divisional Engineer, Ipswich.

June 17.—London and Southern Section, I.G.E.: Summer Meeting, Brighton.

Institution of Gas Engineers

Manchester and District Section

THE third annual general meeting of the Manchester and District Section of the Institution of Gas Engineers was held in the Grand Hotel, Manchester, on April 24, under the Chairmanship of Mr. A. McDonald, Member, North Eastern Gas Board. At the luncheon which preceded the meeting, Mr. McDonald extended a welcome to the members and said he was especially pleased that Mr. D. P. Welman, Chairman, North Western Gas Board, was able to join them.

Opening the business session later Mr. McDONALD said he regarded these meetings as being particularly important—and he thought Mr. Welman would agree with him—not only because of their technical nature, although that in itself was very important, but also from the social angle. There was no doubt that such meetings enabled them to get to know each other much better and created that spirit of good fellowship which could be so useful to the Board.

Mr. A. H. NICHOLSON, Hon. Secretary, intimated apologies for absence from Mr. G. E. Currier, O.B.E., President, Institution of Gas Engineers, and Dr. W. T. K. Braunholtz, O.B.E., Secretary, Institution of Gas Engineers, Dr. R. S. Edwards, Chairman, North Eastern Gas Board, and the chairmen and secretaries of a number of district sections.

Reference was also made to the loss by death of two of the members, Mr. D. M. Henshaw (Huddersfield) and Mr. J. H. Ranft (Lytham).

Mr. McDONALD then welcomed the following six new members into the Section: A. H. Barrington, T.D., North Western Gas Board, Stretford Undertaking; C. E. Byrt, Sheffield; W. A. Dobson, Denton, Nr. Manchester, E. H. Hart, Keighley; H. M. E. Leyshon, Leeds; W. F. Raistrick, Halifax.

Mr. McDonald then presented Higher Grade Certificates to the following students: S. Dobbs, Hull; and J. B. Howard, Hull.

The Year Reviewed

In presenting his report the CHAIRMAN said, 'It has been a privilege to serve as your representative on the Council of the Institution during the past year. It is impossible in a short report to cover the vast amount of work carried out by the Institution and by its committees. It would be ungracious on my part if I were not to pay tribute to the signal honour which has been conferred on the Institution by the Queen in granting patronage. The Duke of Edinburgh has similarly honoured the Institution by consenting to become an Honorary Life Member. This Section can be proud of the fact that these honours were conferred during the Presidency of one of our own members. The work of the Chairman's Technical Sub-Committee has been extensive and has dealt with many items of a technical nature referred to the Institution by the Gas Council. The Education Committee has also carried out a great deal of work, and in order to bring the District Gas Education Committees more into line with present-day requirements their membership has been widened by the appointment of representatives from colleges and education officers.

'I would also like to draw your attention to the modification in the requirements for the Certificate in Gas Salesmanship and Consumer Service. Although the scope of the syllabus in Gas Technology has been somewhat restricted, I want to emphasise that there has been no lowering of the standard. I must also report that the link between the Institution and the District Sections has been fully maintained. At a meeting in December, the President and Vice President met the chairmen and secretaries of the District Sections at which there was an informal discussion on the activities of the Sections. Finally, I would refer to the Benevolent Fund, and as others have done before me, appeal for your continued support. This Section holds the proud place of having the highest proportion of contributing members, but the same cannot be said of those contributing under covenant. If you can do so under covenant, you will still further help the fund without cost to yourself.

Col. W. MONCRIEFF CARR said it gave him great pleasure to propose that the annual report be adopted. Mr. R. L. GREAVES seconded the proposition.

On the proposition of Mr. A. F. YATES, seconded by Mr. J. H. RICHMOND, the statement of accounts was adopted.

Presentation to Mr. Howarth

Mr. McDONALD said that at the last meeting of the Committee reference was made to the fact that Mr. Thos. Howarth had held office continually for 10 years. It was therefore felt that this was a suitable occasion when they ought to show their gratitude in some tangible form, so it was his privilege to make a presentation to Mr. Howarth at the meeting. Mr. Howarth joined the former Association in 1935 and became Hon. Secretary and Treasurer in 1943. During his period as Secretary, which lasted until 1949, several Presidents acknowledged the assistance he had given to them. He became Vice-Chairman of the Manchester Section in 1949-50, Chairman in 1951, and Immediate Past Chairman in 1952, having given a total of 10 years' active service. We recognise sincerity in all he does and a personal modesty which few possess. We therefore make this presentation all the more willingly.' Mr. McDonald then made the presentation of a hall table to Mr. Howarth.

Returning thanks for the gift, Mr. HOWARTH said that anything he had done had given him a great pleasure. He thanked the Section for recognising the service which was a joy to him in each of the 10 years.

Mr. McDONALD then inducted Mr. A. K. Collinge as his successor. He did so willingly, he said, because he knew he was placing these responsibilities in capable hands. They both joined the Association in 1939. Since then they had more or less travelled along the road together. It was probably true to say that any Chairman gave up his responsibilities with mixed feelings in that he had hoped to do so much, and yet felt he had done so little. He at least felt that way, and could only hope they had not been too disappointed with his efforts.

After taking the chair, Mr. COLLINGE thanked Mr. McDonald for the gracious way he had inducted him into office and presented him with the Past Chairman's badge. Each Chairman, said Mr. Collinge, had imprinted something of himself in the Association, and this was certainly true in Mr. McDonald's case. He had carried out the duties of Chairman with unassuming dignity. During his year of office, Mr. McDonald had received the full support of the members as was evident at the various meetings.

Returning thanks, Mr. McDonald said that he would never forget the friendly way in which he was received on coming to Yorkshire, a complete stranger, in 1938. Very quickly they made him feel at home, and soon he had made many friends. When they honoured him by electing him to the Chair of the Section, he accepted in that spirit of friendship which they had always shown him.

Mr. D. P. WELMAN, Chairman, North Western Gas Board, offered his hearty congratulations to Mr. Collinge on his induction as Chairman and extended an invitation to the Section to spend Chairman's Day at Preston.

Mr. Collinge then delivered his Chairman's Address, which was published in the *Gas Journal* of May 6.

A Story of Progress

Mr. H. JOHNSTON, Senior Vice-Chairman, proposing a vote of thanks to the Chairman, said that they had heard Mr. Collinge express his views on a number of occasions and he had always been impressed by his sympathetic attitude to his fellows and by his resolution of problems to a clear practical basis. This outlook was exemplified in the address they had just heard. The first and major portion of the address was devoted to a description of the organisation of the Preston group of undertakings. It was an admirable account of engineering and administrative progress of a group of four undertakings, on a planned basis.

The nationalised gas industry, continued Mr. Johnston, had seen the advantage and the opportunity of manufacturing gas in large central units to supply in bulk, through interlinking mains, smaller works, either to reinforce or to enable them, as an economic measure, to close down. This pattern was being followed in the Preston Group, Preston being the key works—where major extensions were taking place. They were informed of the necessity of complete ammoniacal liquor treatment and of how this was to be carried out. This was obviously the Nicklin process, and from the description was identical in process sequence and treatment to the plant now in operation at Tingley.

Mr. N. G. APPLEYARD seconded the vote, Mr. COLLINGE responding.

On the proposition of Mr. N. C. STURROCK, seconded by Mr. HAINSWORTH, a vote of thanks was accorded to the retiring officers and members of the Management Committee.

Institution of Gas Engineers

LONDON AND SOUTHERN SECTION SPRING MEETING

MR. C. R. M. CROFT, B.A., Sussex Divisional General Manager of the South Eastern Gas Board, delivered his Chairman's Address at the spring meeting of the London and Southern Section of the Institution of Gas Engineers at the Connaught Rooms, London, on May 5. The only other business was the announcement of a number of apologies for absence and the confirmation of the Management Committee's nomination of the following offices for the ensuing year: Chairman, Dr. J. Burns; Senior Vice-Chairman, Mr. E. O. Rose; Junior Vice-Chairman, Mr. A. Tran; Secretary, Mr. A. F. Grant; Auditors, Mr. H. A. Probyn and Mr. C. J. Sawbridge.

We Must Sell to Live

Following the Chairman's Address, to which we shall refer in a later issue, Mr. R. S. JOHNSON, Deputy Chairman of the South Eastern Gas Board, proposed a vote of thanks to Mr. Croft, and said that in a statement so comprehensive it must inevitably be a matter of personal opinion which points should be underlined. He referred to the Chairman's remark that we must sell to live; that prices had reached the competitive limit, and that we needed increased business. The industry was entering on a very difficult phase, that of selling against growing competition when costs over which they had no control were ever rising. They were faced with competition from electricity, oil, and solid fuel. Here the national temperament might come to their aid. Most Englishmen, he suggested, were naturally idle. That was the reverse side of the coin, of which the obverse was their natural calmness and dislike of hysteria. Both those qualities arose, not from any particular vice or virtue in them, but he suggested that living behind the sure defence of the channel, a defence on which they could no longer rely, they had grown loth to get excited about things.

But he thought it was true to say that the English were at their best when they were up against it. Idle easy-going ways would no longer do. A pessimist might say that the gas industry was now up against it. He thought that would bring out the best in them, and he therefore looked to the future with quite an irrational hope.

Public Opinion

Mr. T. C. BATTERSBY, a Past Chairman, seconded the vote of thanks, and said he had known Mr. Croft for many years, but not until he had been 'groomed' by the Gas Light and Coke Company. He had been more closely associated with his father, and he had also had the privilege for many years before nationalisation of serving a company under the chairmanship of Mr. Frank Jones, whom they were all delighted to see that day. In his address Mr. Croft had rightly said that they must rely on public opinion of their activities. That had not changed since vesting day. All industry and enterprise had to rely on public opinion, and if they disregarded public opinion they would endanger their future livelihood. Throughout the paper the theme was increased productivity, which depended on the efforts of each one of them.

He felt they could not within the next few years look for any great improvement in thermal yield. They could, however, look for increased efficiency by reorganisation and the reduction of wasted effort and by the introduction of mechanical processes where today many jobs were done by manual labour. They were now in the unfortunate position that capital expenditure on new plant far outweighed the higher thermal yield likely to be attained by modern plant. They could not now save money by spending; it was rather in reorganisation that they would effect economies.

The CHAIRMAN briefly acknowledged the vote of thanks and expressed his gratitude to the Chairman, Deputy Chairman, and members of the South Eastern Gas Board for the great support they had given him during his year of office. He hoped to see as many members as could get away from their posts of duty on the occasion of the summer meeting, to be held at Brighton on June 17.

At the annual luncheon which preceded the meeting Mr. G. E. CURRIER, President of the Institution of Gas Engineers, proposed the toast of the London and Southern Section, and expressed his pleasure at being supported by Mr. J. T. Haynes and Mr. W. K. Tate, the Senior and Junior Vice-Presidents, Mr. J. H. Dyde, Immediate Past President, and his guide, counsellor, and friend, Dr. W. T. K. Braunholtz, Secretary, together with Mr. A. G. Higgins, Assistant Secretary.

Brooklands Course

One of the main activities of the Institution had always been the furtherance of education, and the raising of the standards for admittance to the Institution, and he paid tribute to the work during the past two or three years by Mr. Dyde as Chairman of the Education Committee. The latest phase of that activity was the Brooklands course, where a number of selected people from the industry were going on a course of seven weeks at the Brooklands County Technical College at Weybridge. It would be a most intensive and comprehensive course which should be of tremendous value to them and to the area boards which they served. The possibility of having the course was due to the generosity of the Woodall Duckham Company in placing at the disposal of the Institution a sum of money annually for ten years, to be used in the cause of education, and secondly to Mr. Dyde's own idea of using the Brooklands County Technical College for such a course.

The CHAIRMAN, replying to the toast, said the Section had had some excellent papers during the past session, few of which had been strictly technical. He was grateful to all who had put so much work into preparing and presenting papers covering such a wide field. Mr. L. J. Clark worked very hard to produce his paper to be read in Belgium, and he came and presented to the Section. He (the Chairman) heard it on both occasions. It was beautifully done and there were little differences in the second presentation which added to its interest.

He made special reference to two of the guests—Mr. Frank H. Jones, Chairman before nationalisation of the company he then served and also his uncle, who was a past President of the Southern Association; and also his father, Colonel C. M. Croft, past President of the Institution. He was indebted to them for all the help he had received from them in the past. On behalf of the Section he thanked the Institution for its help and support, and assured the President that the Section would do its utmost to uphold and maintain its traditions.

The Guests

Dr. A. E. HAFFNER, past Chairman of the Section, proposed the toast of the guests. Besides Mr. Frank H. Jones and Colonel Croft he extended a warm welcome to Mr. K. L. Stock and Major G. C. Hyde, of the Ministry of Fuel and Power, and the authors of papers. They were all impressed by the splendid support given to the Chairman by his colleagues in the South Eastern Gas Board. A few years ago the Board consisted of separate entities which had their own ideas of doing things. It was amazing to see what solidarity had been achieved in so short a time. They as engineers also admired their engineering achievements. They had already seen the completion of many schemes and they looked forward to the time when the extensions at Brighton came to fruition, extensions which they hoped to see on the occasion of the Section's summer meeting. He coupled with the toast the name of Mr. R. S. Johnson, Deputy Chairman of the South Eastern Gas Board.

Mr. R. S. JOHNSON, responding, said there were no fewer than four members of the South Eastern Board present, together with its Secretary, and he was particularly glad to respond on behalf of Mr. Frank Jones and Colonel Croft. The South Eastern Gas Board had indulged in a coat of arms, and its motto might be loosely translated, 'We build on sure foundations.' While the superstructure might not be what those who laid the foundations anticipated, they were seeking to carry on the work that they did for the industry in the past, and they recognised its worth.

The Factories of George Kent, Ltd., at Luton, Resolven, and London, will be closed for the annual works holiday from Friday evening, July 17, to Tuesday morning, August 4. Offices at all factories will remain open and staffed during the holiday.

East Midlands Conference, 1953

THREE GOVERNMENT-SPONSORED FUEL REPORTS

Following the usual practice the second day's programme at the fourth annual area staff conference of the East Midlands Gas Board at Skegness on May 1 was opened with an address by the Deputy Chairman, Mr. E. H. Harman. He compared the three Government-sponsored reports dealing with the country's fuel resources and their efficient and economical utilisation which have been published since 1945. The address of the Chairman, Mr. Sydney Smith, and a review of the conference were published last week.

THE EGERTON COMMITTEE, said Mr. Harman, was appointed in 1942, (i) to review existing scientific information and practice in this country and abroad on the heating and ventilation of buildings; (ii) to make recommendations for practice in post-war building, regard being had both to economy and efficiency for the individual user and to the economical utilisation of the national fuel resources; and (iii) to make such recommendations for further research as may suggest themselves in considering (i) and (ii).

Existing scientific information and practice in this country and abroad on the heating and ventilation of buildings was thoroughly and faithfully recorded and, in this connection, the report contains a mass of technical data and facts. The overall value of being able to find so much data in one place should not be overlooked, nor should the recommended standards for house heating and amenities.

House Temperatures

These are: (i) The whole house should be maintained at a temperature of at least 45° to 50°F.; (ii) living rooms when occupied should have a temperature of 62° to 66°F.; (iii) bedrooms should have during the day and periods of dressing and undressing a temperature of 50° to 55°F.; (iv) kitchens should have daytime temperatures of about 60°F.; (v) halls and passages should have daytime temperatures of 50° to 55°F.

With regard to ventilation, the minimum air supply per hour recommended for a living room with four persons was 2,400 cu.ft. with proportionate reductions for the number of persons and with similar standards for bedrooms. For a kitchen cooking for not more than six persons, the minimum ventilation required was 1,000 cu.ft. per hour and recommendations were also made for halls, passages, bedrooms, etc. With regard to hot water the quantity indicated for two adults and two children was at least 250 gal. of water weekly at 140°F.

The Committee was in obvious difficulties with the second of its terms of reference. This required it to recommend heating and ventilation methods in post-war buildings which would be economical to the user and of the national fuel resources. In the minds of most people this is the most urgent problem of all and the Committee failed signally to solve it. It did, however, record the amortisation and maintenance costs and the fuel consumptions of a number of different combinations of solid fuel, gas, and electric appliances designed to provide the Egerton standards of comfort. By the judicious choice of local circumstances, any or all of the combinations selected could be justified on economic grounds although it was certainly true that those installations with a high consumption of electricity were undoubtedly heavy in their overall coal requirements.

The Committee brought this part of their work to an end with the following conclusion: 'The analysis made in the present chapter shows that no detailed recommendations can be made as to the appliances which should be provided for each and every use. This conclusion is reinforced by consideration of the technical progress which is now being made in all fields of fuel and power production and use. It can be predicted with confidence that progress will be made which will in the long run lead to raising the standards of domestic warmth and comfort with a reduced consumption of fuel. In order therefore to enable the fullest advantage to be taken of all such developments it would appear desirable to provide in all houses the basic facilities for the use of various alternative sources of supply. The data in the tables in the present chapter should be regarded as directed to showing the scope for improvement and to the stimulation of research and technical progress rather than to the guidance of a housing authority in the solution of its specific problems.'

Research

On research, the Committee had little to say but appointed a special sub-committee 'to enquire and report on the desirability of developing in this country schemes for the supply of heat for various purposes by means of steam or hot water from central sources.'

We need not follow the fortunes of district heating today; in association with the waste heat from electric power stations it is a bogey to which we have long ceased to pay serious attention although it is not necessarily dead. However, interest here may be rekindled by the news recently given in response to a Parliamentary question that the sub-committee has reported and publication may be expected 'about the end of May.'

The Egerton Committee concluded its report with these words: 'The use of fuel in the heating of domestic buildings is a matter of great national importance —nearly one third of the country's home consumption of coal being used for this purpose directly or indirectly. From the national point of view, therefore, as well as in the interests of the householder, it is most important that there should be the maximum efficiency in the domestic use of fuel. The efficient use of coal is dependent not only on the manner in which it is burned but on its treatment, its distribution, and its allocation to purposes most suited to its type. Smoke abatement is a national problem and is also highly desirable. We are glad to note that these general national issues have been referred by the Ministry of Fuel and Power to the newly appointed Fuel and Power Advisory Council under the Chairmanship of Sir Ernest Simon.'

The Simon Committee was appointed in 1944 and its first reference was 'to consider and advise on the use of fuels and the provision of heat services in domestic and similar premises, in the interest of the occupants and of the nation, with special regard to the efficient use of fuel resources and to the prevention of atmospheric pollution.' So far as I can see, this differed only from the second term of reference of the Egerton Committee by the request to include the prevention of atmospheric pollution in the report and the narrowing of the field of enquiry to domestic and similar premises.

Continuance of Competition

The Committee reported in January, 1946. Little notice was taken of the recommendations. It is interesting to compare them with those made by the Ridley Committee. It may be noted that the continuance of free competition between gas and electricity for the domestic heating load was recommended subject only to the condition that the prices charged should be appropriately related to costs. Thus was endorsed the Egerton view that all houses should have the basic facilities for the use of various alternative sources of supply.'

A decent period having been allowed to elapse, during which the need to conserve our dwindling indigenous fuel resources became more and more obvious, the Ridley Committee was appointed in 1951, with the following reference: 'In view of the growing demands for all forms of fuel and power arising from full employment and the rearmament programe, to consider whether any further steps can be taken to promote the best use of our fuel and power resources, having regard to present and prospective requirements and in the light of technical developments.'

When comparing the Simon and Ridley reports, it should be remembered that the Simon Committee was charged with solving the domestic fuel problem whereas the Ridley Committee's terms of reference were drawn so as to include industry. The recommendations fall into three classes: (1) recommendations substantially common to both reports; (2) recommendations special to the Ridley Committee, some of which have significance only against the national background at the time of the report; and (3) recommendations having special significance or importance.

Many of the Ridley recommendations had their counterpart in the Simon Report. So far as I am aware, the only Governmental action of any moment taken on the Simon report was through the issue of circulars to local authorities on improved house design. To date, apart from the introduction of better grades of petrol, the Government had not announced any definite action arising

out of the Ridley Report; and the political pressure for a national fuel policy continues. No review of reports such as these can be complete without some examination of the evidence on which the reports have been drawn. I must draw your attention to the evidence given to the Ridley committee on behalf of the National Coal Board, on whose shoulders rest the greatest single responsibility for an adequate supply of fuel to this country. The Coal Board faces a problem of immense size and, by virtue of its special responsibilities and the position in which it finds itself, has the greatest single interest in seeing that the coal which is won so hardly is used in the most efficient manner. I regard its evidence as having a high degree of impartiality and worthy of close attention.

In this evidence we have the cry from the heart of the National Coal Board. It sees in the encroachment of the electricity supply industry on the space-heating, cooking, and water-heating loads a menace which, if not countered, would confound us all; and in the continued and accelerated expansion of the carbonising industries its only hope of meeting the statutory obligations imposed upon it by the Coal Industry Nationalisation Act, 1946.

In reply, the British Electricity Authority drew attention to the rising average efficiency of its generating stations and its use of poor coals. But the generation of electricity in condensing stations suffers from two basic deficiencies: (a) inability to store, and (b) the inherent inefficiency of the thermodynamic cycle of the condensing power station. While (a) might be partially overcome by research, (b) must be regarded as an insuperable obstacle to efficient generation.

The use of inferior coals is certainly a point in favour of electricity and one to which full weight should be given. But it is difficult to believe that the 45 mil. tons which the B.E.A. estimates it will require in 1956 will all be so inferior in quality that it cannot be used at a greater efficiency than 25% in other types of conversion plant.

This brings me to what I regard as the most important of all the recommendations of the Ridley Committee: 'The investigation of methods for the total gasification of coal should be encouraged.' One can only speculate how different the Ridley Report would have been had the gas industry already in operation an efficient method of total gasification using non-coking coals. The thermal efficiency of such a production process should certainly exceed the 53.6% accepted by the Committee for the present gasworks process, while the use of coal as a source of carbon rather than of hydrocarbons and hydrogen would enable us to use the very inferior coals of which our electrical competitors claim to have a monopoly use. The gas industry may yet live to regret that this, the most important research work of all, was not prosecuted with greater vigour in the past.

We hear guarded statements about the use of atomic energy for electricity generation. But the proposals so far only envisage the use of an atomic pile to generate heat for the boilers of a condensing station—in other words as a direct replacement of coal. Such a replacement would not add to the thermal efficiency of electricity generation although it would remove the Coal

(*Continued on p. 376*)

Skegness

Notable arrivals and presentations at the fourth annual staff conference of the East Midlands Gas Board, attended by 300 officers, staff, and guests.

Mr. Sydney Smith, Chairman, arrives with Mr. Henry Jones, Deputy Chairman of the Gas Council.

Presentation to Mr. R. M. Stevenson, who has retired from the Area Joint Industrial Council.

Mr. F. G. Brewer, Secretary, Gas Council, with Mr. E. H. Harman, Deputy Chairman, East Midlands.

The Commercial Manager (right) makes a presentation to Mr. A. Wylie, who is retiring after 48 years in the industry.

Some of the home service advisers

Skegness

— the conference adjourns

New Gasworks AT East Cowes

This is part of the story of the preliminary site works for the new manufacturing station at East Cowes, Isle of Wight. The difficulties, says the author, have been inordinate, but the experience gained has been invaluable

by W. K. TATE, MA*
Southern Gas Board, Junior Vice-President, Institution of Gas Engineers

* In an address to the Scottish Junior Gas Association (Eastern and Western Districts) March 7, 1953

THE Southern Gas Board, though not then fully charged with responsibility, commenced in the early part of 1949 to design a future operational structure, and decided that the control for the six gas undertakings in the Isle of Wight should be placed with the Eastern Division. In consequence prompt steps were taken to become acquainted with the staff and resources of the units which were to vest, when it was immediately apparent that the condition of certain of the works left much to be desired and that some of them were particularly unsatisfactory in location, open space for future growth, and standard of plant in operation. The construction of one central gasworks for the whole Island seemed to offer considerable possibilities, although no existing manufacturing station possessed either the acreage or the facilities desirable for a new production centre. After examination of available sites elsewhere, a report was presented to the Board on May 14, 1949, relating to a plot of land some nine acres in extent and situated on the eastern bank of the River Medina to the south of Cowes. This area was adjacent to the already centralised electric power station and, with some dredging, could be provided with facilities for receiving sea-going colliers, though no railway line was within reach.

The then maximum daily output of gas in the Isle of Wight amounted to approximately 4 mill. cu. ft., and the rate of growth since the end of the war indicated that this might rise to 4.5 mill. cu. ft. by 1955. It seemed prudent, therefore, to suggest that, initially, a gasworks of 5.5 mill. cu. ft. per day maximum capacity would be required, with the positioning of buildings and plant on the site so arranged as to permit of an increase in output to a maximum of 11 mill. cu.ft. per day.

Planning Needs and Site Area

To allow of comfortable planning, with reasonable areas for the storage of bulk material, a minimum of 1½ acres per mill. cu. ft. per day is desirable, and therefore a total site area of some 16 acres would be required. The land in question extended over 9½ acres and it was thought practicable to reclaim a further 2½ acres from the mudlands on the river bank, while there was a possibility that a further four acres adjoining the northern boundary would be available for purchase in due course.

The site appeared to have an immediate sub-soil of clay, with a rise of approximately 47 ft. between the western boundary, which lay on high water mark of the tidal river, and the eastern boundary, while beyond this stretched a gravel cap from which much water flowed in wet weather. The soil is substantial and the accommodation of the works was practicable if the site were terraced into four levels, differing by some 10 ft. each, units of plant being so placed that advantage could be taken of gravity in the transfer of liquids, while loading docks could be simply constructed where required along the edges of each terrace. The soil conditions in the Isle of Wight are surely among the most difficult in the country and, in the eastern districts, incessant trouble is experienced from slipping, due to an underlying stratum of dangerous blue clay. The banks of the River Medina, at its seaward end, are relatively steeply inclined, and this has occurred because of a providential ridge of limestone rock which runs in a north to south direction on each side of the

The site in 1949 when the Southern Gas Board started to design the future operational structure and decided that the control for the six gas undertakings in the Isle of Wight should be placed with the Eastern Division.

This photograph shows the results of the first year's work with an indication of the shape of things to come.

river, close to the waterline and only slightly below the surface of the soil. This strip of rock, although comparatively narrow in width, fortunately passes through the suggested site on a line some 100 ft. from the water's edge and acts, therefore, as a natural retaining wall to the earth above, only soft alluvial deposits existing on the riverside below high water mark.

The electric power station referred to, which lies to the south of the site, gave little trouble when foundations were constructed, as it is located upon the southern extremity of the limestone wall, and there seemed every reason to hope that an equally good bearing would be available for the initial retort house building of the gasworks.

At the close of May, 1949, the Southern Gas Board sanctioned the institution of definite planning, and this proceeded on the basis of the original scheme for a terraced formation. Approximate quotations for the plant required were obtained by the end of July in that year and a complete project was then submitted, incorporating plant of a capacity equal to 5.5 mill. cu. ft. per day output, with provision for a doubled output to 11 mill. cu. ft. per day at the cost of some congestion in buildings and a lack of desirable storage grounds.

Early Exploration

It might be interpolated here that the congestion has been relieved by the purchase, during 1952, of the previously mentioned four acres to the north of the original site, but no re-positioning of the buildings is proposed.

The layout of plant was designed with every intention of reclaiming approximately 2½ acres along the river front, which consisted of soft alluvial mud of unknown depth, and it was essential that early site exploration should take place.

The preliminary plan was approved and actual physical work began at once, but it is not the purpose of this paper to deal with more than the initial civil engineering activities, these being not the least awkward of the many obstacles which have been encountered. It will, however, suffice to say that the requirements of the Town Planning Authorities were met, that all the remaining consents from Ministerial Departments and other bodies were obtained, and that the only real difficulties arose from the restrictions of the Cowes Harbour Commissioners, who compelled the Board to adopt a proposed water front some 20 ft. further inshore than was desired.

With some knowledge of the irregular soil conditions existing in the Isle of Wight it seemed more than ever needful to carry out a detailed examination of the chosen plot of land, since there would probably be much to be learnt—and, indeed, this proved very true. Nevertheless, knowledge acquired so laboriously and painstakingly is ever valuable, and at least there can then be reasonable certainty of the effectiveness of the resulting foundations, on which all ultimately depends.

A firm of consulting civil engineers with wide experience of both gasworks requirements and marine structures was consulted at an early stage and assumed responsibility for the detailed design of all concrete work while acting in the closest concert in the land investigation. Clearly the first two essentials were to locate and test the limestone belt and to assess the real potential of the mud foreshore from which over two acres of reclaimed land were to be won, and for this purpose the Pre-Piling Company's method of testing was adopted.

The equipment employed in the survey consisted of a pointed steel shoe of 2¾-in. diameter mounted on a rod, and this assembly was driven into the ground by means of a 240-lb. weight dropping freely some 9-in. to 12-in. through the operation of a manual winch. Periodically, and as required, steel tubes of 2¾-in. internal diameter and 4 ft. long were also driven into the hole formed by the shoe until this part was overtaken, and then both toe and tube were moved down together, giving a total resistance from the whole of the pile of the chosen diameter—*i.e.*, both frictional and toe resistance. A set of 1 in. for eight blows on both toe and tube can then be converted mathematically to an equivalent for piles of any girth, and suitable co-efficients are introduced into the calculation to cater for the different frictional effects between steel, wood, or concrete constructions. The frictional resistance is further confirmed by withdrawing the tubes through the agency of hydraulic jacks and measuring the upward thrust required. In the particular test under review a depth was required which would give a toe resistance of 100 tons for a 14-in. x 14-in. square reinforced concrete pile, this toe resistance being twice the maximum working load while frictional resistance was neglected altogether, thus providing, in many places, an additional factor of safety.

Returning now to the site, the first operational step involved the cutting of lanes through the scrubby undergrowth which covered the lower slopes in order to provide essential triangulation points and well spaced positions for the pre-piling survey. In choosing the locations for driving the test piles it was decided to follow the assumed eastern boundary of the limestone belt, as indicated on geological survey maps, with special reference to the proposed sites of the retort house and the larger gasholder. It was then intended to return along the new waterfront, which it was hoped to establish at some 20 ft. to the east of low water mark. The two upper levels, although to be substantially built upon, were destined to bear loads distributed over an extensive ground area and so were

ignored at this stage, since early excavation revealed that the sub-soil was heavy clay, liberally bespattered with large stones. To expedite the project, however, and before any tests were, in fact, carried out, a design of jetty and waterfront was prepared on conventional lines consisting, broadly, of a concrete platform supported upon load-bearing piles, a number of which were driven at an angle to the vertical in order to present a resistance both to inward loads from berthing ships and outward thrusts due to the land reclamation which was to lie behind the facework. Furthermore, because the soft consistency of the foreshore mud was already appreciated, it was decided to dispense with a sheet piled face and to retain the reclaimed land by a heavy tipped rampart of limestone, chalk or other hard material.

The civil engineering contractors took possession of the site at the close of September, 1950, and, having erected the customary colony of hutments, proceeded to make an immediate start on earth grading for the provision of initial filling to the reclaimed area. At the same time accurate surveying continued with the establishment of the exact boundaries of the land and the essential base lines and points of level.

Pre-cast Reinforced Piling

It had been decided to use pre-cast reinforced concrete piles in preference to one of the many varieties that are cast *in situ*, since more precise knowledge of the ultimate bearing resistance is obtainable and, furthermore, the nature of the foreshore was thought to be unsuitable for piles formed by the injection of concrete into ground as an outer steel casing is withdrawn. Pile casting beds were laid down on the reclaimed area and at other convenient points, and casting commenced in mid-November, followed by the driving of the first sheet pile on December 4, 1950. The sheet piles varied in length from 25 ft. to 33 ft. and in section from 18 in. by 25 in. to 18 in. by 20 in. as experience required, the majority being driven to a set of 1 in. from 10 blows of a 3-ton hammer falling freely through 4 ft.

In all some 185 sheet piles were cast and 181 were driven with varying success, the early units finding bottom according to anticipation, but as the line moved northward and the fault was approached, extensions *in situ* of up to 10 ft. became necessary and positioning proved difficult, the broad flat section of the pile offering much resistance to hard strata with a consequent tendency to twist and rack the piling frame. The row of sheet piles was supported on its outward face by vertical and raking load bearing piles, which also drove with varying fortune, and at the northward end achieved penetrations of nearly 60 ft. although, in some instances, it appeared that boulders were struck and driving became so hard that a penetration of $\frac{1}{4}$ in. for 10 blows was normal and, on occasion, piles fractured.

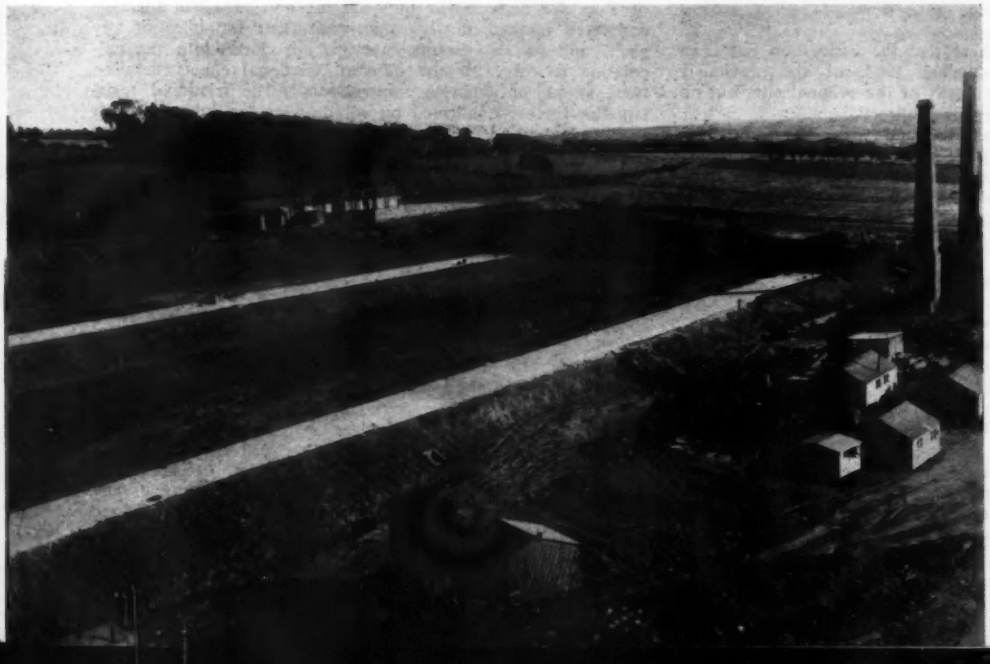
At the close of the first year's work 83 raking piles had been cast and 82 driven, together with 158 load bearing piles cast and 139 driven, providing virtually all the piling required to form the wharf, jetty, and reclamation land, while substantial progress had been made in knitting the pile heads together with beams and decking slabs. Nevertheless, from March, 1950, onwards shortage of reinforcing steel had exercised a retarding effect and, notwithstanding priority certificates and all other possible representations to authority, little easement was obtained and construction fell woefully behind schedule.

A fault in strata reached in from the river behind the jetty, and across which the northern edge of the reclaimed area passed. As was anticipated this proved to be troublesome and, apart from requiring lengthened sheet piles, it was found that the load bearers beneath the roadway could be driven for up to 50 ft. into the mud and, at that depth, were still moving for 12 in. from 12 blows of the hammer. Extensions were therefore added and sets obtained after further maximum penetrations of 6 ft. In general it was apparent that the limestone belt presented a jagged and uneven edge to the river, quite at variance with the steep face to the east, and that it threw off shallow ledges of rock in a horizontal plane which were liable to give a false impression of security unless piles were re-driven some days after they had seemed to have attained a satisfactory depth. This formation is probably not surprising since, over the ages, the River Medina has doubtless chafed and fretted at the rock which, being limestone, is notable for the peculiar configurations it can assume under erosive influences. Any doubtful piles were therefore re-attacked as convenient and, after very hard driving, were sometimes persuaded to move downwards for another 4-5 ft.

With the introduction of the steel authorisation scheme supplies of reinforcement revived and pile casting commenced again in December, 1951, 428 piles being fabricated in the following three months. Pile driving on the site of the principal gasholder began on January 21, 1952, and the necessary 283 piles were placed by April 12, followed by 54 similar units for the foundation of the carburetted water gas relief holder, these piles being driven in five days. In the former instance penetrations were remarkably uniform at between 35 ft. and 40 ft., but in the latter case depths varied from 26 ft. to 42 ft. dependent on the proximity of limestone boulders.

The Factor of Steel Supplies

Between the relief holder foundation and the site of the secondary storage holder lies a road which passes to the additional lands and is supported upon a piled structure integral with the holder foundation. Penetration here varied widely from 26 ft. to 51 ft. as the water's edge was approached. Legitimate doubts were held as to the precise depth of the hard strata below the location for the secondary holder, and pile driving was approached with caution, early tests indicating the necessity of lengths approaching 65 ft. While, therefore,



The site was terraced into four levels differing some 10 ft. each, units of plant being so placed that advantage could be taken of gravity and loading docks could be simply constructed

The completed wharf. Over the whole construction 185 sheet piles and 851 square piles were cast and the majority were driven.

the early piles driven in March near high water mark were those already constructed to a length of 50 ft., future fabrication was confined to units of 65 ft. length and the rate of installation became entirely dependent on the speed of fabrication, itself related to steel supplies.

Shortage of the large diameter steel bars required for piles of 65 ft. length deferred construction until August, 1952, but in the following three months 192 such piles were cast and the driving of the 226 piles supporting the raft for the secondary holder was completed in December, 1952. Driving conditions were astonishing in that, at about 25 ft. to the west of high water mark, even the 65 ft. pile was insufficient in length and, after extension, drove to over 60 ft. penetration and, in one instance, to no less than 71 ft. penetration. Thereafter the ground rapidly improved and at the centre of the holder depths of 50 ft. were achieved, with a steadily lessening penetration to 46 ft. as the outer edge of the holder foundation was approached. Another peculiar sector existed in the vicinity of the proposed coal crusher house, which was sited to the south of the fault behind the jetty, and here adjacent piles only some few feet apart drove to depths of 56 ft. and 42 ft. respectively, with sets of $\frac{1}{4}$ in. and $\frac{1}{16}$ in. after 10 blows.

In all, over the whole construction, 185 sheet piles and 851 square piles of 14 in. or 16 in. section and to lengths varying from 40 ft. to 65 ft. were cast, and the majority were driven, very few failing either in handling or through constructional defects of one kind and another.

So much, then, for the pile driving, upon which everything depends and from which so much had been learnt of the irregularity of strata below a seemingly innocent ground surface. Concreting of beams and decking had naturally followed steadily behind the placing of the piles but other site works proceeded only intermittently as weather permitted, since the horrible effect of heavy rain upon the newly exposed clay subsoil immediately precluded the movement of any machinery except upon prepared roads. Site grading was pressed forward in the summers of 1951 and 1952 and by the spring of 1952 comprehensive surface and soil drainage systems had been installed and connected ultimately with an 18 in. diameter outfall to the River Medina. Concrete road construction commenced in May, 1952, and all roads were in place by the autumn, whereafter the earth banks forming the edges of the terraces received a dressing of top soil and a liberal application of grass seed. This flourished at once and quickly converted a dirty and untidy area into a spot that was almost a thing of beauty, if not a joy for ever.

Satisfaction was but short-lived, however, because, with the first rains of winter, severe cracks appeared at several points in the faces of the banks, to be followed by heavy slips which even undermined the foundations of the roads above. Urgent thought was given to these disastrous happenings and examination of the slips revealed that in no case was the earth beneath the toe of the bank disturbed, the moving burden apparently sliding out over the face of the level below. The displaced soil consisted of a wet mass little more dense than slurry, and it was felt that water must be arriving behind the grassbound face of the slopes and then, unable to soak into the clay subsoil of the plateau, collecting in a pool embracing the tipped clay and ultimately forming a slurry with no resistance whatsoever to vertical loads. Failure then occurred and, if the diagnosis was correct, it was obviously essential to trap the water or divert it into desired channels.

Accurate drainage plans of rural lands are notoriously few and far between, and although every attempt had been made to design the new surface water system to embrace not only the new plan but also all existing lines, some might have been missed or mutilated without report during the earth grading operations. On the eastern boundary re-examination of the uppermost bank revealed a succession of regularly spaced land drains leading from the gravel cap and discharging immediately behind the face of the bank. These were absorbed into trenches cut in the face of the bank and filled with brick rubble to the pattern that is so familiar on railway cuttings. On the lower levels the slips had been more serious but less widespread and, in these instances, trenches have been dug at the side of the roads remote from the banks and then filled with hard core above porous land drains, the pipes connecting to appropriate junction chambers in the new drainage system. No further slips have since occurred and it is hoped that a solution has been found to a very disturbing problem.

Conclusion

This, then, is part of the story of the preliminary site works for the new gas manufacturing station at East Cowes, Isle of Wight. No doubt from mere conceit I am tempted to think that the difficulties have been inordinate, but the experience gained has been invaluable. Although the present state of progress should have been achieved just 15 months ago, the plague of steel shortage has attacked plant installation even more seriously, and the consequent delay which inconveniences no one except the consumer, who is deprived of the benefits of the new works, and the Southern Gas Board, whose expended capital lies idle, is unfortunately only too common throughout the land.

What lessons have we learnt? Surely the lessons that any engineer must learn—and constantly re-learn—when he comes to wrestle with the elements and, in the words of the Charter of the Institution of Civil Engineers, endeavours to exercise 'The Art of Directing the Great Sources of Power in Nature for the Use and Convenience of Man.' To me, personally, our experiences have emphasised three truths, which surely apply to any task, whether it be the selling of a gas appliance, the preparation of some new administrative routine or, indeed, anything else: First, to make sure of your basis by every possible means; secondly, never to assume that you can depend upon what you do not know but can only guess; and, thirdly, always to be ready to adapt yourself with a flexible and pliant mind and outlook to changing conditions. Of these three the last is perhaps the most important, and it must never be forgotten that there are many other and better ways of overcoming obstacles and gaining the desired end than the mere retention of pre-conceived ideas.

I should be lacking in my duty if, in conclusion, I did not take this opportunity of expressing publicly my deep appreciation of the courage of the Chairman and members of the Southern Gas Board in pursuing the project of the central works notwithstanding considerable discouragement, and if I did not also pay a small tribute to those who have guided and assisted me in the work. The consulting engineers have never failed to give of their best, and my own personal staff engaged on the task have ever supported me in the face of much frustration, disappointment, and delay. It is a privilege to have been associated with them all.

EAST MIDLANDS CONFERENCE—continued from p. 370

Board's objection to the extended use of electricity. So also would the building of oil-fired generating stations.

Three Committees have come and gone. Three opportunities have been given for a national fuel policy to be defined. Three times has the opportunity been refused and three times has it been confirmed that competition between gas and electricity should continue. The Englishman's home remains his fuel castle and he will be swayed in his choice of fuel, not by any consideration of national fuel economy, but by the comfort and convenience of the service offered him and its cost.

It behoves us, therefore, to strain every nerve to reduce the price of our products and to improve our service. This can be done by increasing the efficiency of our operations and by the development of appliances having improved efficiency and lower cost. The consequential increase in consumption per consumer will, of itself, lead to reductions in distribution and overhead costs to pave the way for further reductions.

While the gas industry can rest secure in the knowledge that its efficiency as a user of coal is unchallenged and that the continued expansion of its business represents a major contribution to the solution of the fuel problem of this country, it cannot close its eyes to the new responsibility laid upon it by the absence of a Government-sponsored national fuel policy—the responsibility of guiding the man-in-the-street along the gas and coke path to national fuel economy.

Some Comparisons

There were two appendices to Mr. Harman's address. In Appendix I he gave a comparison of recommendations substantially common to both the Ridley and Simon Reports, recommendations special to the Ridley Committee, some of which had significance only against the national background at the time of the report, and recommendations having special significance or importance. In Appendix II he gave extracts from the evidence of the National Coal Board to the Ridley Committee.

In the first appendix Mr. Harman drew especial attention to a comparison between the following series of recommendations:

Ridley Report, 1952. (27) The investigation of methods for the total gasification of coal should be encouraged. (39) The Minister of Fuel and Power should be assisted in his general control over the price policies of the nationalised fuel and power industries by the establishment of a specialised Tariffs Advisory Committee. (40) The Minister of Fuel and Power should establish a Joint Fuel and Power Planning Board.

Simon Report, 1946. (10) The necessary legislation should be passed to enable smokeless zones to be established, and a few such zones should be declared, mainly for experimental purposes. (11) It should be the target of a national domestic fuel policy to secure that the 50 million tons of bituminous coal now burnt with a working efficiency of 20 per cent. should be replaced in 20 years by smokeless solid fuel, or by bituminous coal burnt smokelessly, or by gas, or by electricity, with an average coal economy efficiency of not less than 40 per cent. This would render possible the following results: The virtual abolition of domestic smoke. Less labour and dirt in the house. And either: (a) doubling the useful heat in the smaller houses at little or no greater cost to the householder and no increase in the consumption of coal; or (b) an increase of 50% in the useful heat in the smaller houses with a substantial reduction in cost to the householder and a saving to the nation of perhaps ten million tons of coal per annum.

Among extracts from the evidence of the National Coal Board to the Ridley Committee, Mr. Harman quoted the following:

Para. 22.—Electricity is the most versatile, the most convenient, the cleanest, and the most easily transportable of all fuels. For some purposes—primarily lighting and mechanical power—electricity is uniquely suited and practically irreplaceable; for other purposes—such as space-heating, water heating, cooking—it competes with all other fuels and could easily be replaced.

Para. 23.—The heating load has been developed primarily to increase the sale of electricity during off-peak hours; but it has not been possible to confine electric heating to off-peak hours and to prevent its accentuating the peak load problem. The Authority is studying various devices—changeover switches, load limiters, time-of-day meters—to limit, as far as possible, this 'spilling-over' of the heating load into peak hours.

Para. 24.—Continuous heating jobs can be done with the greatest thermal efficiency by using solid fuels in approved modern appliances. Electricity can normally do short-term, intermittent heating jobs with a higher coal efficiency than solid fuels, although it cannot rival the coal efficiency of gas. But if the heating job is intermittent, as, for instance, in cooking, it cannot easily be shifted to off-peak hours. Thus, even if the use of electricity for short-term heating jobs were justifiable on grounds of thermal efficiency, such use would inevitably accentuate the problem of the peak and thus extend the amount of load shedding during many years to come.

Para. 25.—In short, if the use of electricity as a heating fuel were restricted to off-peak hours, and thereby confined to relatively continuous heating jobs, the argument of thermal efficiency would be unanswerable. If it were not restricted to off-peak hours, but were confined to strictly short-term heating jobs, the thermal efficiency argument would be much weaker, but the argument of generating capacity would become unanswerable. The Board is thus driven to the conclusion that the use of electricity for ordinary heating purposes—space heating, water heating, or cooking—must in present be considered as generally incompatible with the national interest.

Possible Saving of Coal

Para. 26.—The country is using about 14 mill. tons of coal, after conversion into electricity, to do heating jobs which could most probably be done by 7 mill. tons of coal burnt either in its raw state or after conversion into coke and gas. If the whole of the heating load now resting on electricity could be shifted to other fuels, not only would the nation save some 7 mill. tons of raw coal, but there would also be an end to the need for load shedding and the electricity supply industry would be able to meet any likely expansion in the demand for electricity for purposes of light and power without raising its raw coal consumption above the present level.

Para. 28.—The removal over the next five years of the heating load now carried by electricity, coupled with the full implementation of the investment programme of the British Electricity Authority, could solve the problem of load shedding; it would make it possible at the same time greatly to expand the amount of electricity available to industry for power and light, thus helping to raise industrial productivity; and it could do this without increasing the amount of raw coal used for electricity generation above the 1951 figure of 35 mill. tons. Such a policy would increase the supply of useful heat or energy to the consumer as if an additional 12 mill. tons of coal per year had become available and would thus solve about one-half of the country's fuel problem of 1956.

Para. 29.—If nothing is done, the use of electricity for heating purposes will grow and the nation will continue to be caught in the vicious circle to which the Board alluded in its annual report for 1950 (paragraph 133). The coal shortage will make it necessary to continue to limit supplies of raw coal to householders who in turn will be driven to use coal through the medium of electricity at half the thermal efficiency that might have been obtained by burning the coal direct. Thus coal will become scarcer still, and there will be an ever-increasing use of the wrong fuels for heating jobs.

Para. 31.—If the heating load were to be gradually removed from electricity, other fuels would have to take it on. The main choice is between raw coal, coke, and gas, with oil as a standby for exceptional cases.

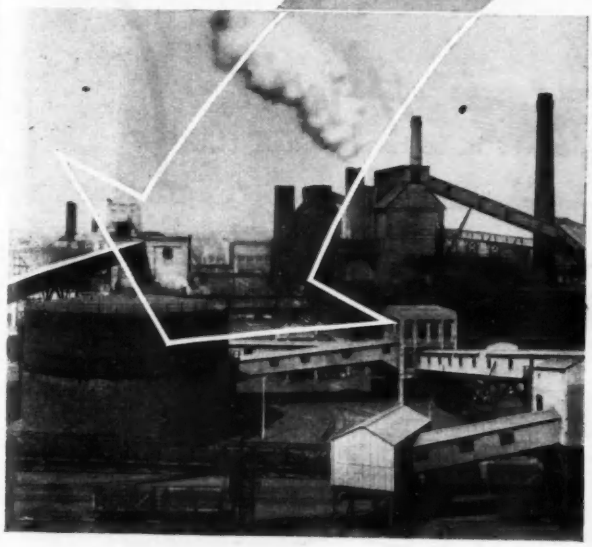
Gas the Obvious Choice

Para. 32.—Little, if anything, would be gained if the intermittent heating jobs now done by electricity were taken over by solid fuel. Here the obvious choice is gas. As gas can be stored, the gas industry faces not nearly the same peak load problem as does electricity. And the capital costs of gasworks, per ton of raw coal used, are only about 40% of those of electricity works. A shift from electricity to gas would be helpful for these two reasons alone. But it would in most cases also be helpful from the point of view of coal economy, for it takes roughly twice as much coal to produce an equivalent heat value by electricity as it does by gas.

Para. 33.—If more gas is made, there will also be more coke, which is an extremely suitable fuel to replace electricity on continuous heating jobs. In some respects, coke has advantages even over raw coal. Coke in stock presents no dangers of spontaneous combustion. Ordinary coke is much less easily burned in the old-fashioned open grate than raw coal, and if coal supplies continued to be short while coke supplies were greatly expanded many consumers would thereby be forced to abandon their inefficient grates and replace them with new appliances.

Para. 34.—The Board is of the opinion that every effort should be made to shift the heating load away from electricity to gas, coke, briquettes, and raw coal. The expansion of the carbonisation industries (and of briquetting plants) should be pursued with the utmost vigour.

Para. 35.—The gas industry is engaged on a programme for both new investment and replacement of obsolete plant. So are the coke ovens. The combined programme calls for 10 mill. tons of additional coal in 1956. If the demand for coke and gas is abnormally stimulated by the policy suggested for electricity, the carbonisation industries may need more than that.



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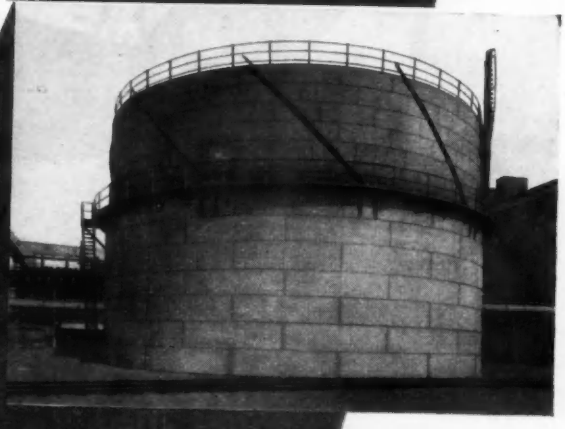

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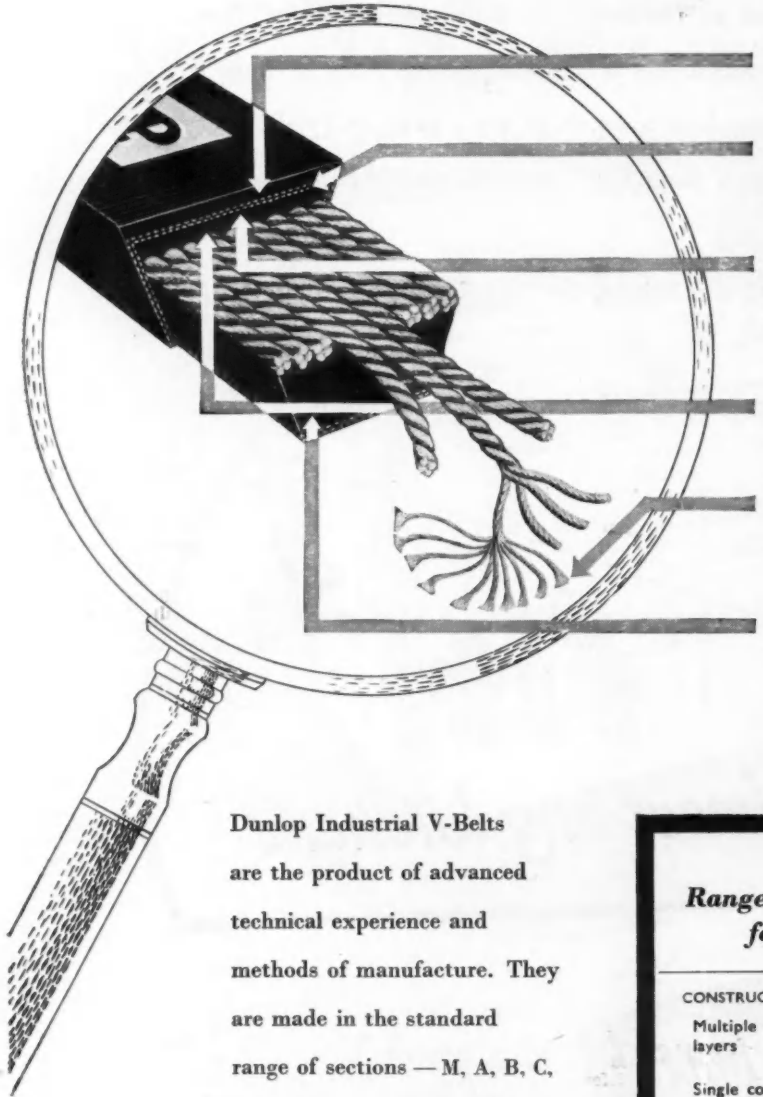

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British Gas Staff Association

Conference at Brighton

BRANCHES throughout Great Britain were represented at the annual conference of the British Gas Staff Association, which was held at Brighton on May 8 and 9 under the chairmanship of Mr. W. E. Webb, J.P., who, at the end of the long agenda, was re-appointed Chairman without opposition. Some 73 resolutions were submitted by the National Council and the various branches and a year of substantial progress was reviewed in the annual report. Including a number of distinguished guests there were over 300 at the banquet at the Hotel Metropole on Friday evening. The success of a heavy programme was a tribute to the work of the General Secretary, Mr. F. C. Henfrey-Smith, helped by Mr. S. C. Jones (time-keeper), Mr. A. D. H. Block (Press officer), Mr. H. R. Kitchen (chief steward), and Mr. J. J. Benham, Mr. J. W. Chandler, Miss Holloway, Mrs. Skelton, and Miss Webb (stewards).

The Chairman's Address

The CHAIRMAN, in his opening address, extended a cordial and general welcome to the conference, which for the second year in succession was being held in a provincial town, and for the first time at Brighton. As conference succeeded conference each year, some few members of the old guard who were with them in the beginning were for various reasons absent, and it was with regret that he had to announce the recent death of Mr. Herman Jefferson, of Wakefield, Yorkshire, a member of the National Council. Mr. Jefferson was held in high esteem and affectionate regard by all who were privileged to know him and he displayed great courage and fortitude during his long illness. The British Gas Staff Association was the poorer for his passing.

It was encouraging to note that the vitality of the B.G.S.A. was restored and maintained by a constant flow of younger members eager to take up the responsibilities of office and the conference continued to grow each year in importance and popularity. The B.G.S.A., founded in 1946 by amalgamation of the Gas Staff Association and the Central Committee of Gas Staff Associations and fully registered as a trade union in that year, had a proud record of steady progress and achievement in all matters pertaining to the conditions of service and the welfare of gas staffs, and the past year was no exception to the general rule. Membership continued to increase, and the financial position was satisfactory and secure.

Redundancy

During the year an increase in salary scales was secured for staffs and intermediate grades. Redundancy, which reared its ugly head in some areas, was tackled swiftly and difficulties amicably resolved. A new national pension scheme introduced by the Gas Council was favourably received. The overtime payments agreement was not so well received in some quarters and grievances were being investigated. An application for an increase in London weighting was submitted to the Gas Council. Legal assistance was successfully undertaken for some members, and was greatly appreciated.

When the flood disaster occurred on the East Coast the National Council acted with commendable promptitude. A relief fund was organised and practical assistance speedily given to those members known to be in need. A scheme to provide pensions for the salaried staff of the B.G.S.A. had been devised by the National Council.

Thermfare continued its good work as the spearhead of considered opinion and it was more widely read than ever before. They owed a debt of gratitude to the editor and committee for their excellent and untiring work in producing a first rate journal.

The work of re-organisation consequent on the nationalisation of the gas industry was steadily reaching completion. At national, area, and local levels, the machinery of negotiation and consultation was established and working harmoniously and efficiently. Now that this had been accomplished, they would have more time to devote their thoughts and energies to matters of policy in the gas industry.

The first essential was a full, frank, and complete understanding and co-operation between the Gas Council, the area boards, and the employees in all matters pertaining to the efficiency and prosperity of the industry and the welfare of its employees, and to facilitate this end they would continue to urge the acceptance of the principle of employee representation on the Gas Council and the area boards.

The continued development of coke oven plant and the manufacture of gas by the National Coal Board was watched with grave concern. The primary and essential duty of the National Coal Board was to increase the production of coal to the point where consumer need was fully met, and they might be forgiven for thinking that the carbonisation of coal and the distribution of gas were matters which should remain entirely with the gas industry, which for 140 years had so faithfully and capably served the needs of consumers.

A national fuel policy to integrate and co-ordinate the activities of the three great fuel producing industries, coal, gas, and electricity, was a matter of prime and urgent necessity. As the fighting Services, the Navy, Army and the Air Force, while retaining their individuality, were organised and co-ordinated to the common end, the defence of the country, so too should the three great fuel industries be organised and co-ordinated in the interests of national economy and the public weal. The vital problem of smoke abatement, as emphasised by last winter's fogs over the new towns as well as the older cities, also pointed to the need for a comprehensive fuel policy and they would urge the Government to take prompt and vigorous action to attain that end.

Remission in purchase tax granted in the recent Budget afforded a welcome partial relief but purchase tax levied on the necessities of life was never cheerfully borne. The continuance of tax on water heaters and washing machines was a tax on cleanliness which inflicted hardship on citizens of moderate means, a hardship which was further increased by the restriction of hire purchase to a period of 18 months. Both tax and restriction should be removed completely from these appliances in the interests of public health. The ban on promotional advertising should also be removed without delay. It served no useful purpose, and the present position was farcical in the extreme. The gas industry had done well since nationalisation; its enterprise and efficiency was most marked, but to get full results, pettifogging restrictions must be removed.

He thanked the Vice-Chairman, Mr. C. C. Holt, and the members of the National Council, for the excellent services they had rendered to the B.G.S.A. during the past year, and for the courtesy they always accorded to the chair. The General Secretary, Mr. Henfrey-Smith, had performed his many and varied duties with great skill and tact. The smooth efficiency at headquarters was a tribute to his painstaking attention to detail. Mr. Arnold and his organisers had successfully dealt with numerous appeals, and had obtained some noteworthy successes. Week-end schools had been organised with beneficial results. The sound financial position of the Association emphasised the good work performed by the Treasurer, Mr. Robson.

Banquet Speeches

At the banquet on Friday evening Councillor A. V. Bishop (member of the B.G.S.A. National Council) proposed the toast of the Corporation of Brighton, and Alderman E. Sims, Deputy Mayor, responded.

The Chairman, proposing the toast of the gas industry, said the presence of Mr. W. K. Hutchison, Chairman of the South Eastern Gas Board, was evidence of the goodwill which had existed in the industry in the past and which they were trying to extend in the new nationalised industry. Gas staffs had had no part in nominating the Gas Council, but if they had they would have chosen Mr. Hutchison as a member. They were proud to belong to the gas industry and united in their desire for its prosperity. They had been to some extent disappointed in the Chancellor of the Exchequer's decision to take off only one-quarter of the purchase tax which, in the case of gas water heaters, was a tax on cleanliness. It was, however, a step in the right direction.

Mr. W. K. Hutchison, replying, said the industry had been distinguished for many years by the close community of interests among all who served it in whatever capacity. When slight differences occurred, as they were bound to do, they managed to settle them among themselves, and they looked forward with confidence to the future successful working of the machine which together they had forged in the years since nationalisation—the machine for joint negotiation and consultation. The success of that machine would be conditioned as much as anything by the view that the well-being of the industry was the concern of all of them. They were assisted by their sincere belief that they had always

given, and always would give, the best possible service to the public they served with the fuel they provided. The Association's journal, *Thermfare*, had referred to the pegging of gas prices. To check the rise in price they must have something better than a call for economy; they must work together for increased efficiency. They were not afraid of competition, though they were watching their electrical friends closely. The gas industry had several years start; it had a fine organisation and a fine staff, but success could only be fully achieved by their united effort.

Dr. A. B. Badger, Industrial Relations Officer of the Gas Council, proposed the toast of the Association, which he described as a very potent force in determining the attitude of gas staffs towards those appointed by the Government to run the industry. The industry belonged to the State, and they were all citizens of the State and carried a great deal of responsibility. Any increase in salaries and wages could only be recouped by an increase in the price of gas, and that increase they would all have to pay. *Thermfare* had taken umbrage at his statement that it was time the trade union movement gave up its militancy towards nationalisation. Old fashioned militancy was now out of date, and as a nationalised industry they should be able to look for an increasing degree of co-operation from the unions in making the experiment a successful one.

Mr. C. C. Holt, Vice-Chairman of the Association, and Mr. G. Goldsmith, Chairman of the South Eastern Area, responded to the toast. Mr. Holt said the members of the Association wanted co-operation just as much as Dr. Badger wanted it, and they realised that unless the industry was efficient they would get nowhere.

Miss G. F. Tucker, B.G.S.A., member of the Equal Pay Campaign Committee, proposed the toast of the guests, among whom she mentioned the Deputy Mayor and Mrs. Sims, Mr. and Mrs. W. K. Hutchison, Dr. Badger, Mr. L. Hill, Mr. and Mrs. McCrae, Mr. and Mrs. C. R. M. Croft, the auditors, the technical Press, and wives and sweethearts of delegates.

Dame Vera Laughton Mathews, Adviser on Women's Affairs to the Gas Council and a members of the South Eastern Gas Board, responded and referred to her membership of the area Joint Council for Gas Staffs. She wondered whether any other area had a woman on its joint council, and she looked forward to seeing a woman on the 'other side'; there was not yet one at national level. She understood that gas staffs in Great Britain comprised about one-third women, many of whom, it was true, might be in junior positions, but she felt there should be greater representation for them.

Edinburgh Social Club.—Members of the Edinburgh Division of the Scottish Gas Board have decided to form a social club. It is the sequel to a proposal that was originally made five years ago. It is hoped that the club will become the parent body to other clubs within the Division, including the golf and bowling clubs, pipe band, etc. The new body will be entirely self-supporting and financed by voluntary deductions from the wages and salaries of members, who at present number about 860. Mr. David McCallum was elected Chairman of the club, with Mr. Frederick B. Cooper as Hon. Secretary and Mr. Thomas Clark as Hon. Treasurer.

Improving Fuel Utilisation

MR. G. E. CURRIER, O.B.E., Deputy Chairman of the North Eastern Gas Board, and President of the Institution of Gas Engineers, speaking at the 43rd annual dinner of the Bradford Engineering Society, on May 1, said that since the war this country had been faced with a succession of fuel crises due to there being insufficient coal to meet all demands.

As coal output increased so slowly, he said, the only solution to the problem was an all-round improvement in the efficiency of fuel utilisation. Engineers could make a very worthwhile contribution to the national economy similar to those made in other industries. To maintain our position in world markets we must maintain the quality and price relationship of our products. To do that we needed not only a fair day's work for every man, but continued superiority in scientific knowledge and engineering skill.

Many of the engineering concerns, continued Mr. Currier, were not only supplying the needs of the textile industry and helping to maintain the export of textiles, but in addition were exporting a variety of engineering products. In Bradford much had been done to reduce smoke in the atmosphere, and in this respect the gas industry had played its part.

The populations of the Eastern countries, declared Mr. Currier, were increasing rapidly, providing for their rulers and industrialists a reservoir of the cheapest labour. The West, losing ground rapidly in manpower, could only compete in war and peace by the progressive upgrading of the skill of every one of its working population.

Mr. Currier, who was chief guest at the dinner, was proposing the toast of the Society.

Two Gas Points in the grounds of the Palace of Holyroodhouse, Edinburgh, were brought into use to provide tea for 100,000 miners and their families at the Scottish Miners' Gala Day celebrations on May 4. The outing was held in Holyrood Park, which adjoins the Palace grounds. The two gas points were tapped, and a pipe led over the Palace wall and connected with 19 high-pressure cookers in a kitchen tent.

Women's Gas Federation at Southport

EIGHT hundred women delegates went to Southport's Floral Hall on April 29 for the first North Western Conference of the Women's Gas Federation and Home Service Guilds organised by the North Western Gas Board's Home Service Section.

The guests were Dame Vera Laughton Mathews, D.B.E., the Lady Mayoress of Liverpool, the Chairman of the North Western Gas Board, Mr. D. P. Welman, and Mrs. Welman, and Mrs. Eileen Murphy, Home Service Adviser to the Gas Council.

After Mr. Welman had welcomed the ladies to the conference, and Dame Vera had spoken briefly on the part played in our national way of life by women's organisations, the delegates settled down to hear Mr. William Brown, who is Chairman of the Fabrics Investigation Committee of the Institution of British Launderers as well as General Manager of the Savoy Hotel Laundry, London, give a paper on 'Modern Laundry Methods: New Fabrics and New Detergents.'

The afternoon session of the conference opened with a paper on 'Health and Hygiene in the Home' read by Dr. G. O. Hughes, Chief Medical Officer of the North Western Gas Board. Dr. Hughes emphasised that one of the first essentials of good health is a happy atmosphere in the home. He pointed out that the human mind and body are so co-ordinated that worry or anxiety can be the cause of many illnesses which would never assail a happy person; good health is not merely freedom from disease, but a constant feeling of well-being.

After afternoon tea, the last speaker, Mrs. Constance Spry, spoke on 'Flower Decoration in the Home.' To this everyday pleasant household duty, Mrs. Spry gave a new and exhilarating perspective, aided most effectively by lantern slides of her art.

Dame Vera Laughton Mathews, who had acted as Chairman for the morning session, closed the conference with thanks to its organiser, Miss Hilda Swindells (Chief Home Service Adviser, North Western Gas Board) for the splendid work she and her helpers had done to make the first North Western Conference such a success.

Duke of Edinburgh at B.I.F.

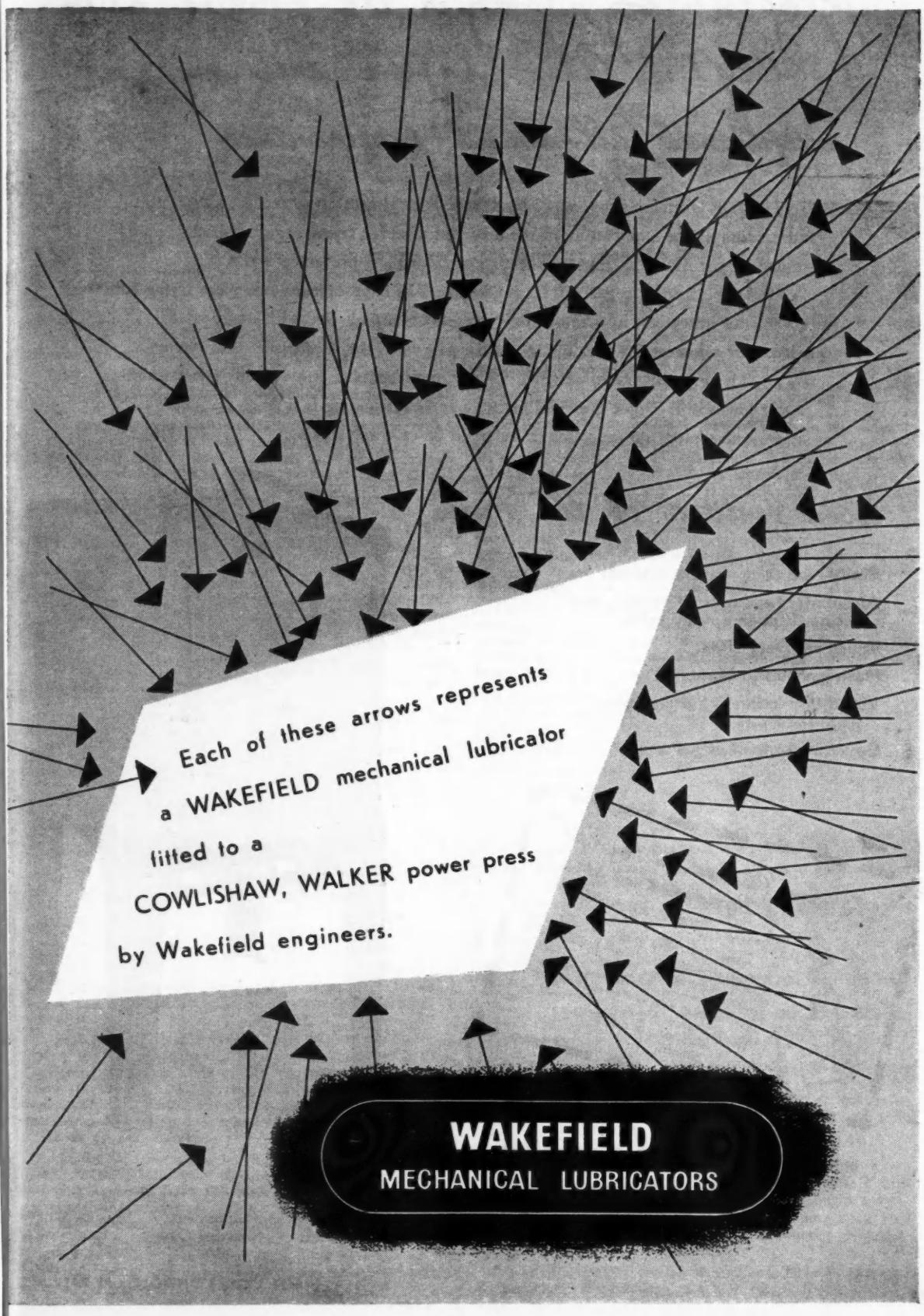
ON APRIL 30 the Duke of Edinburgh visted the British Industries Fair, Castle Bromwich, making a thorough inspection of the various exhibits. On the stand of Fredk. Braby & Co., Ltd., Mr. John Marchbank explained to the Duke his invention for glazing metal windows and partitions—an entirely new method requiring no screws or accuracy in fitting. Mr. Marchbank is in charge of the window and partition department of the firm's Glasgow works.

The Duke called at the stand of G. A. Harvey and Co., heating engineers, of Greenwich, and closely examined a 6 ft. tubular heater which the company is making for an American firm. The Duke asked F. E. Peake, Area Manager, several questions.

On the stand of Sperryn & Co., Ltd., the Duke was greeted by Mr. Neville Sperryn, Director of the firm, and past President of the Birmingham Chamber of Commerce, and he was very interested to hear that Sperryns had provided more than 1,200 fittings—from electric junction boxes to bunk lights—for the royal yacht Britannia. Mr. Sperryn also explained to the Duke the intricacies of a safety device to prevent explosion in any type of industrial or commercial gas fired apparatus.

At the Gas Council Stand the Duke chatted with Mr. H. R. Hems, Industrial Gas Officer to the West Midlands Board.

On the stand of Jack Olding, Ltd., the firm's Latin-American Sales Manager, Mr. Stewart Hall, recalled to the Duke that they had been at school at Gordonstoun together. Mr. Hall said afterwards that the Duke had been head boy at the school. At the Fair the Duke displayed great interest in the firm's heavy tractors and particularly in overseas sales and the success it was having in competing with the Americans.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some features of the Fryer

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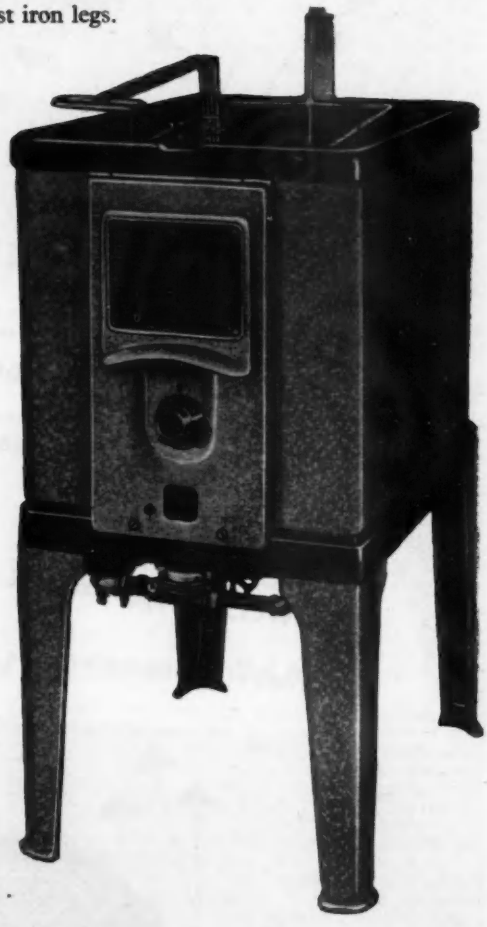

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Q4

BULK SUPPLY TO A SMALL UNDERTAKING

By O. P. CRONSHAW, M.Inst.Gas E., M.Inst.F.,
Engineer and Manager, Rhyl, Prestatyn, and St. Asaph,
and
C. W. BUTLER, Assoc.M.Inst.Gas E., A.M.Inst.F.,
Distribution Engineer, Rhyl, Prestatyn, and St. Asaph, Group Distribution Officer, Clwyd and Deeside Group, Wales Gas Board.

From a paper to the North Wales Section of the Wales and Monmouthshire Junior Gas Association

THIS paper attempts to describe the problems involved, and the methods adopted, when a bulk supply of gas was given to the St. Asaph undertaking from the Rhyl works.

When a bulk supply of gas is given from one undertaking to another, it is usually given because of one or more of the following reasons:—

(a) A neighbouring works can produce gas more cheaply.
(b) The plant of one works may require a major overhaul, and it may be more convenient and economical to carry out minor alterations to a neighbouring works, in order to afford a bulk supply.
(c) An increase in demand on an area may embarrass an undertaking and make a bulk supply, or linking up with another works, imperative.

In the case of the St. Asaph undertaking, it was for the first of these reasons that the possibility of giving a bulk supply was considered.

One of the advantages of the nationalisation of the gas industry, as applied to the Wales Gas Board at any rate, is that costs of production, distribution jobs, management, etc., are worked out on a common basis by the accounts section of the various groups, so that undertakings in that group know their expenditure in all the stages of manufacture and supply, and can compare costs with undertakings in the same group and, indeed, throughout the groups of the Wales Gas Board's area.

In going through the accounts of the undertakings in the Clwyd and Deeside Group, under the headings of 'Net cost into Holder,' the figure for 1952 for St. Asaph was 16.85d. per therm, while for the neighbouring Rhyl works the cost was 8.07d. per therm. Here apparently was such a margin of cost as to make the possibility of a bulk supply to St. Asaph an attractive proposition.

The costs into holder over the last three years at Rhyl and St. Asaph are shown in Table 1:

Table 1.

Net costs into holder in pence per therm.

	Rhyl.	St. Asaph.
1950	8.57	18.75
1951	8.33	19.24
1952	8.07	16.85

It is regretted that only over this short period, since nationalisation, can costs between the two undertakings be properly compared.

It will be noticed that despite rises in cost of coal and labour, the costs into holder at the Rhyl undertaking show a progressive decline, while at St. Asaph, though showing a decline in 1952 due to a change in administration and technical control, is substantially above the Rhyl charge, and this discrepancy is likely to be emphasised with any future increase in labour or coal charges.

From the evidence given by these costs it was decided to investigate the possibility of closing down the St. Asaph works and take a supply from the Rhyl undertaking. It will be appreciated that when considering such a scheme it was necessary to obtain as much information as to the size of load likely to be encountered at St. Asaph, both at present and in the future, and to see what steps must be taken by the Rhyl undertaking and in particular to the distribution system to cater for this load.

St. Asaph is a small Cathedral City with a population of just under 2,000; the number of gas consumers in the area is 390, with a total annual works make of 11,860,000 cu.ft. of 500 C.V. gas. At a time when a large number of undertakings are facing a fall in consumption, St. Asaph's output is steadily rising. The maximum day's send-out recorded to-date is 40,000 cu.ft. The gas from the stop-end horizontal retorts is stored in two small single-lift holders with a total capacity of a little over 19,000 cu.ft. The pressures thrown by the holders are 3½ in. and 4½ in. W.G.

Development at St. Asaph in the past has been very limited. The area is a purely residential one and likely to remain so. In trying to assess the possible future load in the area our attitude has been one of cautious optimism, and it is felt that if the consumption can be maintained in line with current upward trend, this will be satisfactory. With the price of gas at St. Asaph at the equivalent of 2s. per therm, on the grounds of price little advantage can be shown over other forms of fuel; and though it can be argued that price alone may not be the chief factor in gas sales, it is certainly an important one in any future development.

To give an adequate service to any district it is necessary to meet maximum peak loads. It is at these times that the industry is judged by the consumer. Any bulk supply whether given direct to the district or through existing small works holders must take into account this fact.

It was decided that a useful purpose would be served if the following points could be ascertain for an average Sunday working:—

(a) The hourly send-out.
(b) The hourly make.
(c) The hourly holder stock.

We found that:—

(1) The day's send-out was 32,800 cu.ft.
(2) The maximum hours send-out was 4,600 cu.ft.
(3) The maximum instant peak load expressed as a rate per hour was 5,000 cu.ft.
(4) The minimum hourly send-out, which occurred between 1 a.m. and 2 a.m., was 100 cu.ft.
(5) The minimum holder stock was 10,000 cu.ft.

From the above it could be deduced that:—

(a) The ratio of the maximum hourly load to the day's send-out was 1 to 7.
(b) The peak demand per consumer expressed as a rate per hour was $\frac{5,000}{390} = 13$ cu.ft. approximately.
(c) If it be assumed that the whole of the 100 cu.ft. noted as sent out between 1 a.m. and 2 a.m., which was the minimum quantity observed, was the result of leakage on mains and services, then the unaccounted-for gas from this source could not exceed $\frac{2,400}{32,800} \times 100 = 7.3\%$.

In actual fact the unaccounted-for gas figure at St. Asaph for the year ended March, 1952, was 6.7%—quite a satisfactory figure and one which larger works might envy.

(d) It would be possible to lose a greater holder stock than the minimum of 10,000 cu.ft. recorded without embarrassment to the supply position.

It was with this background of conditions to be satisfied that we considered the problem of a bulk supply to St. Asaph.

The nearest main on the Rhyl distribution system to the St. Asaph area is at Rhuddlan, some 4,600 yds. away. This is a 4-in. main crossing the downstream side of a bridge spanning the River Clwyd. The 4-in. main is the terminus of a 6-in. increasing to 8-in. main which is supplying a considerable portion of the south side of the Rhyl area and passing through a part of the district where considerable development is scheduled to take place. As this 8-in. main nears Rhyl it is joined by another 8-in. main and a 10-in. main on the east side of the town. An adequate supply is given to the Rhyl urban area at all times of the year, but the village of Rhuddlan, situated at the end of the 8-in. main, causes some concern for about two or three Sundays in the year—the peak weeks at the end of July and beginning of August. At this time, when the works output may be 75% above the spring and autumn loads, pressures down to 2 in. have been recorded on the Rhuddlan area when 10 in. pressure has been applied at the works, though this has been for periods of less than half an hour, and only on Sundays.

Meeting Growing Demand

Our first consideration, therefore, in supplying gas to St. Asaph, was that this may have to be considered with a reinforced supply to Rhuddlan, to cater for future development in the area and also to obviate the need for abnormally high pressure used at times of peak demand to push the gas to the south part of the district. It was felt that it would be of help in formulating any scheme if it could be ascertained whether the Rhuddlan mains could supply gas to the St. Asaph area either direct to the district or via the holders at that works. It seemed unlikely that the present peak load at St. Asaph of 5,000 cu.ft. per hour could be met, even on a normal Sunday, and maintain a reasonable pressure at Rhuddlan, while at peak times in the summer the pressure falls to 2 in. W.G., which rules out any additional peak loads.

To see how much gas could be taken from the Rhuddlan area, and the effect on the Rhuddlan pressure when taking various amounts, it was decided to install a meter on the end of the Rhuddlan main and 'bleed' off gas from the system at a measured rate and record its effect at Rhuddlan by the installation of gauges at suitable points.

A 1,800 cu.ft. per hour meter was used for the experiment, and this was connected to the 4-in. main at the end of the system at Rhuddlan. The test was carried out at 4 p.m., at off-peak period. When a gas rate equivalent to 2,400 cu.ft. per hour was taken from the system, the pressure in the Rhuddlan area was lowered by 1 in. W.G., from 48 tenths to 38 tenths. These figures showed:—

(a) That St. Asaph could not be supplied direct from Rhuddlan, since the effect of taking 5,000 cu.ft. per hour from the Rhuddlan systems would reduce the pressure there to below 1 in. W.G.

(b) If a main was laid from Rhuddlan to St. Asaph, and the holders were used to store gas there, the terminal pressure would not be sufficient to lift the holders and some form of booster would have to be used to inflate them.

(c) That the maximum that could be taken from the Rhuddlan area without causing embarrassment to that area would be 2,400 cu.ft. per hour, or thereabouts, and this at off-peak periods only.

The hourly make of gas at the St. Asaph works varied between 900 cu.ft. and 1,800 cu.ft. per hour, depending on the syle of charges in the retorts. From the results taken by metering the gas at Rhuddlan, a graph could be made showing the probable effects on the pressure at Rhuddlan, when similar amounts to the present hourly make at St. Asaph were taken from the system. It was shown that when taking the minimum hourly requirement of 900 cu.ft. per hour, the effect was to drop the pressure at Rhuddlan by 0.14 in. W.G., and when taking the maximum of 1,800 cu.ft. per hour the pressure was lowered by 0.56 in. W.G. This set of conditions applies to off peak periods only, and to the Rhuddlan area.

After due consideration, it was decided, therefore, that a 6-in. main should be laid between Rhuddlan and St. Asaph, the main to be used in the initial stages as a low pressure main, but to take sufficient care in its laying so that it could be converted into a high pressure main when the need arose. It was considered from the information now at our disposal, that the present consumption at St. Asaph could be met from the Rhuddlan mains if the St. Asaph holders were used to store gas to meet the peak periods.

If, during times of peak demand at Rhuddlan, no gas was put into the St. Asaph holders, a reasonable margin of stock was available to keep the supply on a sound basis, and the relatively high rate of supply available at off-peak periods would quickly bring the holders stock up again. This supply from Rhuddlan, it was anticipated, would be sufficient to meet the needs of St. Asaph for the next five years at least, but in conjunction with the 6-in. main between Rhuddlan and St. Asaph it was felt that the supply to Rhuddlan and the south side of the Rhyl area should be reinforced by the laying of a main direct from the Rhyl works to Rhuddlan. This main, it was decided, should be laid of such a size that it would be capable of supplying all Rhyl's requirements should this works be supplied either from the Wrexham grid or from a methane grid from Point-of-Ayr Colliery. The bulk main to St. Asaph from Rhuddlan may in future form part of a much wider grid embracing a considerable portion of the North Wales area.

A £10,000 Main

A preliminary investigation into the cost of laying a main between Rhuddlan and St. Asaph showed that the scheme would cost approximately £10,000. Assuming an average interest and depreciation charge on the main of 6.2%, the annual charges for the scheme could be expected to be in the order of £620.

Expressing this in terms of cost per therm of gas to be transmitted through the main per annum on the basis of the 1951 consumption at St. Asaph, the cost per therm would be approximately 2.5d. Referring to the earlier remarks which stated that the cost per therm into holder at St. Asaph was 16.85d., while that at Rhyl was 8.07d., the additional annual charges in the proposed main would still show a considerable saving over the cost of making gas at St. Asaph. This saving in production costs, if not making gas cheaper to the St. Asaph consumer at this stage, would cut out a not inconsiderable financial loss incurred by the Board at St. Asaph.

Having decided, therefore, that it was a sound economical proposition, and that it was expedient to lay a main for the bulk supply, having also obtained the Board's approval to carry out the work, the all-important question of obtaining the pipes, etc., had to be faced. From our experience in the past with spun cast iron pipes having flexible joints, both in laying and in the usually trouble-free life that one associates with this material, our natural impulse was to order cast iron pipes to do the job. Enquiries to the manufacturers of spun iron pipe for prices and delivery dates, however, showed that unless a quicker delivery of material could be obtained than that quoted for, the Board would be faced with a continuing loss for some years, and the possibility of having to carry out repair to the carbonising plant at St. Asaph could not be ruled out.

It was therefore decided to make enquiries as to prices and delivery times for steel mains. These proved to be considerably easier to obtain, and the prices were much the same as the spun iron pipes. Accordingly, it was decided to use steel mains, and an order was placed with Stewarts and Lloyds, Ltd., for the necessary piping. At this time an I.S. authorisation was not required for steel goods, and it so happened that we were able to take delivery of the whole of main between Rhuddlan and St. Asaph before the introduction of I.S. authorisation permits.

The tubes were of three main types:—

(a) Socket with spigot for welded joints.

(b) Tubes with plain spigot ends rounded for Johnson couplings.

(c) Socket and spigot tubes for spherical welded joints.

All the tubes were in random lengths of 16 to 23 ft. long.

There were also a number of fittings and some 25 syphon pots with spigots and sockets for welded joints. In choosing the tubes it was considered that sleeve welding would give a better job than butt welding.

(*Continued on p. 388.*)

IMPORTANT MEASURES

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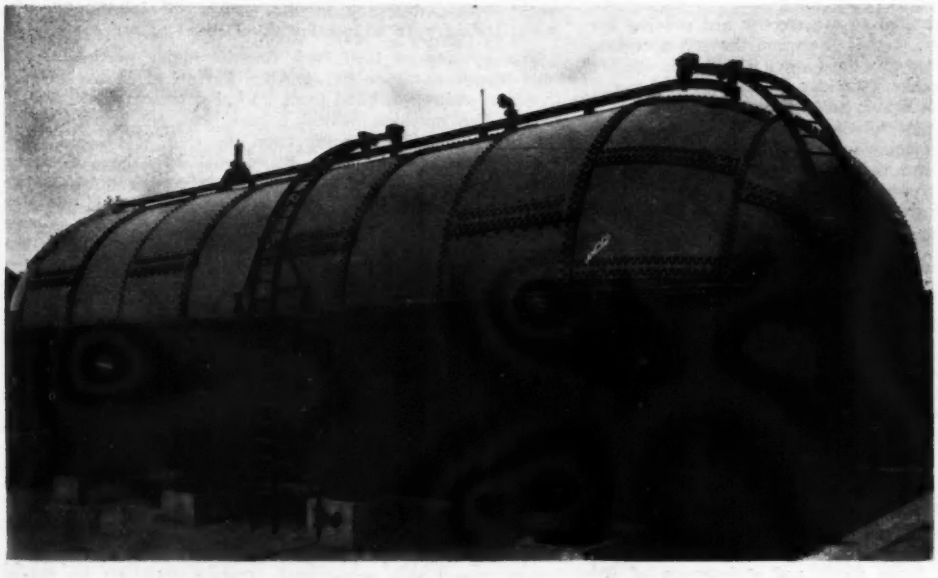

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16

The outside diameter of the tubes is 6⅝ in. and the thickness of the walls is 7 S.W.G. (0.176 in.). Steel is much more prone to corrosion than cast iron, and coupled with a considerably thinner wall of pipe the life of a plain steel main would be considerably less than that of cast iron. It is therefore the practice to protect the outside of the pipe with some form of coating, usually of a bituminous nature, and the inside with painting, usually red lead.

The socket sleeve and spigot pipes are made to fit one into the other in the same way as cast iron pipes, but they are practically a sliding fit and no 'kick' or deviation can be got from the joint for negotiating bends. The spherical welded joint pipe has the advantage of retaining the properties of a sleeve welded joint and yet allows offsets up to 5° to be made. The spigot of the spherical welded pipe fits into the socket of the spherical joint in very much the same way as a ball joint.

On the 6 in. size, we experienced no difficulty in making Johnson coupling joints on pipes that had not been rounded, but in sizes over 8 in. some difficulty would probably be encountered if pipes on which Johnson couplings were to be used were not specially rounded. Since our pipes are adequately protected with a bituminous sheathing, to make a good pipeline it is necessary to have some protection over the joints, and this is afforded by placing moulding boxes around the joints and pouring in hot solution, similar to the composition of the sheathing, into the moulds. The moulds used were of two types, those made of steel to make the joints on welded pipes, and aluminium alloy boxes for Johnson coupling joints.

Part of a Larger Grid

The main to be laid may form part of a much larger grid, on which work had commenced some time earlier in the Wrexham area. The mainlaying work on the grid was being carried out by contractors, and some difficulty was found by them in making welded joints which would stand up to a test of 100 lb. per sq. in. at the first attempt, and considerable time was spent in making joints tight. After considering our own resources, we decided to attempt the work by direct labour, with the assistance of a hired trench excavator and calfdozer for replacing excavated material.

It had been earlier decided to use electric arc welding for all welding on the mains, rather than use the oxy-acetylene method. It was considered that the former would be a quicker method and from our works experience would prove a better weld for our type of job. Accordingly, it became necessary to purchase a mobile engine driven generator set, and it was decided to purchase a machine from the Quasi Arc Co. The purchase was a diesel driven twin generator capable of supplying direct current to two operators and giving an electrode range of 16 S.W.G. to 4 S.W.G., and a current output of from 20 amp. to 300 amp. for each operator.

It was our intention, when ordering the steel main, to avoid as much as possible positional welding in the trench, which is a difficult and highly skilled job, and to try to do the bulk of the welding out of the trench with downhand welds. Accordingly, the welder was sent out to the site with a few men to weld the spigot and socket pipes together in lengths made up of between six to nine pipes, the first and last pipe in the section to be a pipe having ends rounded for Johnson couplings, our idea being to drop this section in the trench and connect with Johnson couplings to spigot ended sections.

A spigot and socket pipe was placed on two wood planks to enable it to be rolled. Another similar pipe was joined to it, also supported on planks, so that both pipes could be rolled together, and the sleeve joint was lightly tacked in four places with a 12 gauge vortic rod at intervals of 90° round the pipes. This tacking of the pipes served several purposes:—

(1) It enabled both pipes to be rolled as one.
(2) It enabled the lengths to be connected in a straight line and to be trued up. This is important in avoiding any dip in the main.
(3) If the joint proved to be rather wide, the joint space could be hammered closer before the run was made.
(4) Tacking at four evenly spaced intervals round the joint tended to avoid distortion of the joint due to the cooling of the weld and the consequent contracting of the metal.

In the first stages of the welding, 12 gauge vortic electrodes were used for making the joints, but it required between seven and eight of these rods to run one joint, which in addition to being relatively costly, due to having seven or more stub ends left for each joint, also meant that the arc had to be restruck seven times with the attendant danger of trapping slag at the joint of the runs. Using 12 gauge electrodes, and a current of about 100 amp, a welded joint was made in 20 min. excluding the time in preparing the joints.

In the preparation of the joints, the bitumen paint had first to be removed from the spigot ends of the pipes by rubbing with paraffin rags and cleaning with a wire brush.

Heavy Gauge Welding

After making several sections with the 12 gauge vortic rods, it was decided to try welding with a much heavier gauge electrode in an effort to speed up the welding rate and to avoid continually restriking the arc with the attendant delay and waste of time and metal. The electrode used in the experiment was a 4-gauge 'Radian' rod which had been specially developed for high speed welding and is particularly adaptable for welding in a downhand position.

Each pipe when joined to its neighbour was lightly tacked with a small rod in four places, and then a single run round the joint was made with the 4-gauge rod. One rod 18 in. in length was sufficient to run a joint on the 6-in. main, and a stub about 2 in. long was left over. The cost of a 12-gauge rod is approximately ¼d. compared with 2¼d. for a 4-gauge. There is thus a considerable saving in the use of the larger rod, since over seven small electrodes were required compared to one of the larger gauge. More important still, a joint could be made in about 5 min. and the actual run with the larger rod could be made in 2 min. Also the joint had a smoother finish, excellent penetration, and no evidence of any under-cutting of the parent pipe. The whole appearance of the joint looked neater and more solid. All welded joints on the line of main were made with this rod.

A newly welded joint rusts very quickly, and since we expected the pipes to be laid on the side for maybe six weeks before dropping in the trench, all joints after the initial testing were wrapped with 'Denso' to prevent rusting.

The opening of the trench for the major portion of the total length was done by an Allen Parson 12/21 bucket type trencher, which was hired from a local contractor on a weekly basis. This machine proved a real help, for besides taking the heavy work of opening from the staff, it enabled more rapid progress to be made than could have been done by hand. We were informed by the contractor from whom we hired the machine that up to 400 yds. of ground per day could be opened, given favourable conditions, but we were unable to open and lay more than 150 yds. per day in the type of ground encountered. It will be appreciated that the cutting depth of the machine had to be continually altered to cater for the fall required in the main, and this, of course, meant a great deal of hand bottoming of the trench, to get the pipe on a firm bed. The whole length of the main will finally be put under a standing test pressure of 90 lb. per sq. in.

ADVANCES TO COAL BOARD

The report of the Comptroller and Auditor-General shows that advances by the Government to the National Coal Board for capital requirements amounted to £11,540,000 during the financial year ended March 31, 1952. Further sums amounting to £37,450,000 have been advanced in 1952-53.

In 1946 and 1947 advances amounted to £41,085,000, of which £8 mill. was repaid later. During 1948-1951 the Board met the whole of its capital outlay of £117 mill from depreciation funds and other resources of its own.

In April, 1951, the House of Commons was informed that further advances from the Ministry amounting to at least £235 mill. would be needed to enable the Board to meet its planned capital expenditure of £635 mill. between 1950 and 1965.

Total liabilities of the Board to the Exchequer outstanding on March 31, 1952, amounted to £276,257,912. Compensation money payments to that date amounted to £43,896,452.

COMPANY MEETING

PARKINSON AND COWAN, LTD.

A Difficult Year: Sir George Jessel's Address

THE fifty-third annual general meeting of Parkinson and Cowan, Ltd., was held on May 8 in London.

Sir George Jessel, BT., M.C., the Chairman, in the course of his address, said: 1952 was a poor year for the light engineering industry in general, and your company's fortunes followed the general trend. Our consolidated trading profit was £355,422 (£521,745 in 1951). We preserved the company's austere depreciation policy by charging £128,421 for this item (£114,545 in 1951). Your directors recommend that we repeat our 1951 ordinary dividend of 7%, but the bonus of 2% cannot be added on this occasion. There will then be £25,505 available to increase the carry-forward of the group to £219,424. Our turnover for 1952 was little changed from that of the preceding year, but the sudden arrival of a buyers' market led to intensive competition and a narrowing of profits. Our leather interests suffered heavy loss due to continued decline in raw material values, and the national demand for gas appliances fell heavily from the level of the preceding year. Our current assets exceed our liabilities by £1,084,000 and our net fixed assets now stand at £737,000, compared with £679,000 last year.

The strength of our business is measured by the quality of our new products and 1953 will be a vintage year for our group, for we shall introduce to our customers several entirely new products, some of which embody radically new technical conceptions. We shall shortly introduce the Renown Mark V gas cooker, which we believe to be the finest domestic cooker yet built in Britain. We shall also before the year ends introduce a gas heated washing machine incorporating conceptions of radical novelty which we believe will assure it a solid place in a market which is capable of great extension. We shall also introduce a new gas water heater which has been under development for five years and which combines the best American practice with some basic inventions of our own. We claim that this apparatus will provide a domestic hot water service by gas at low fuel costs with perfect control and with the lowest maintenance expenses ever known. In our gas, electricity and water meter business we have new products in advanced development which will enable us to face world competition with solid confidence. In the specialised engineering field we are introducing a range of control devices produced under licence from the American Robertshaw Company which have attained a world-wide reputation. To these projects and many others we have devoted large sums of money and great effort.

The year 1953 started badly but indications are that business is improving.

I have said that 1953 will be a vintage year for new products but the wine of vintage years is not drunk until later and I cannot at this stage hold out expectation that 1953 will show substantial improvement over 1952. I can, however, say that the opportunities before your company are as stimulating as they ever were and we look ahead with confidence.

The report and accounts were adopted.

The retiring directors, Mr. W. H. Dimsdale and Mr. E. C. Woodall, were re-elected, and the Chairman concluded with a tribute to the managing director, Mr. H. P. Barker, and to the staff and workpeople.

Company News

CAPE TOWN

The Cape Town and District Gas Light and Coke Company announces an ordinary dividend of 6% for the year 1952 (same). Net profit £21,623 (£21,908) before tax of nil (£4,512), add surplus on sale of fixed assets nil £31,998). To production plant repairs £14,000 (£3,000), special depreciation pre-1940 assets nil (£31,998), forward £7,717 (£7,624).

NEWTON CHAMBERS

Profit, 1952, £822,297 (£693,237), plus investment income £71,542 (£73,693). Deduct depreciation £106,163 (£100,636), fixed asset replacement reserve £95,390 (£67,773), directors' emoluments £20,313 (£21,229) and tax £519,277 (£375,300), including E.P.L. £100,600 (nil), net profit £152,696 (£201,992), plus unrequired tax provisions, etc., £26,635 (£14,086). To employees' bonus and pensions £31,858 (£28,004), general reserve nil (£100,000), distribution 25% (same on smaller capital and including 5% bonus), as announced, forward £267,522 (£221,768).

AUCKLAND N.Z.

The Directors of the Auckland Gas Company, Ltd., report, for the twelve months ended December 31, 1952, a balance of carry forward at credit of profit and loss, after deducting the dividend paid in February, 1952, of £3,463. Profit for the year, after deducting working expenses, rates and land tax, depreciation, income tax and social security taxes, and other charges, is £19,846, leaving a balance of £23,309. A dividend of 3% for the year is recommended, leaving to be carried forward the sum of £7,338.

PARNALL (YATE)

Parnall (Yate), Ltd., manufacturers of cookers, wringers, washing machines, etc., announce the maintenance of a 6% dividend for the past year. Profits for 1952 are announced as £37,994 in comparison with £140,900, but the 1952 figure includes a charge of £34,856 excess cost of stocks of raw materials contracted by a subsidiary in a previous year. The balance after tax is £189 in comparison with £42,865 but, with the inclusion of items for tax no longer required of £275,500, there is an available total of £427,133, compared with £168,147 a year ago.

BABCOCK & WILCOX LTD.

The statement of the Chairman, Mr. W. Lionel Fraser, to the annual general meeting of Babcock and Wilcox, Ltd., to be held in London on May 28, recommends a final dividend of 7½%, less tax, plus a bonus of 3%, less tax, making 18% for the year. The directors regard the figures of turnover and trading profit as satisfactory. It is considered manifest that the sellers' market for the company's products has gone, but the volume of orders on hand, both at home and for export, is encouraging. 'Looking to future developments, there can be little doubt that the efficient utilisation of coal and other fuels will remain the predominant factor in steam generation, and research and development in combustion, as well as in all other methods by which power may be produced, continue to hold a prior place in the attention of all those responsible for the destiny of your company.'

Glover and Main

AN INTERESTING NEW VEHICLE and trailer embodying many novel features, whereby an increased capacity is available and loading and unloading operations are facilitated, has just been added to the already large transport fleet of Glover & Main, Ltd., at their Gothic Works, Edmonton. The complete unit was built to the special requirements of Glover & Main primarily for transport in bulk of the gas cookers and gas meters manufactured and marketed by them, and initially will be operating between Edmonton and the Bristol branch.

The vehicle and trailer were supplied by A.C.V. Sales, Ltd., and all the bodywork, including cab, A.E.C. body, and Carrimore trailer body, were executed by Glover, Webb, and Liversidge, Ltd.

When fully loaded the complete outfit can carry about 150 cookers or 2,250 meters, as compared with the normal load of 60 cookers or 1,000 meters. The payload which can be carried with the maximum permissible is 12 tons 8 cwt.

Council House Cookers

A PROPOSAL to stop providing free gas cookers to tenants of new Edinburgh Corporation houses is to be reconsidered following a recent heated Town Council debate. The plan of the Corporation's Housing Committee was to provide only gas and electricity points, leaving tenants to make their own arrangements for installing cookers.

Housing Committee spokesmen argued that it was unfair that tenants of subsidised houses should also get cookers at the expense of the ratepayers. Opponents of the scheme complained that it was an attack on the standards of housing, that it was absurd, stupid, and cheese-paring. One critic objected that it would mean making a present of £10,000 to the Gas Board, since for every 1,000 houses they built the Corporation paid £15 for the cookers and the cost to the tenants under this scheme would be £25 10s. It was pointed out by the Housing Committee that the higher price included maintenance.

It was eventually agreed that the Housing Committee should take the matter back for reconsideration.

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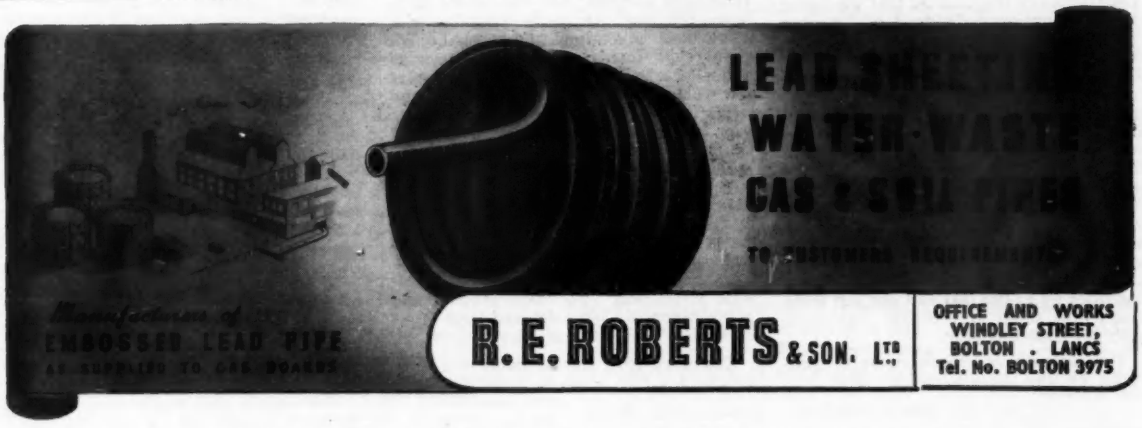

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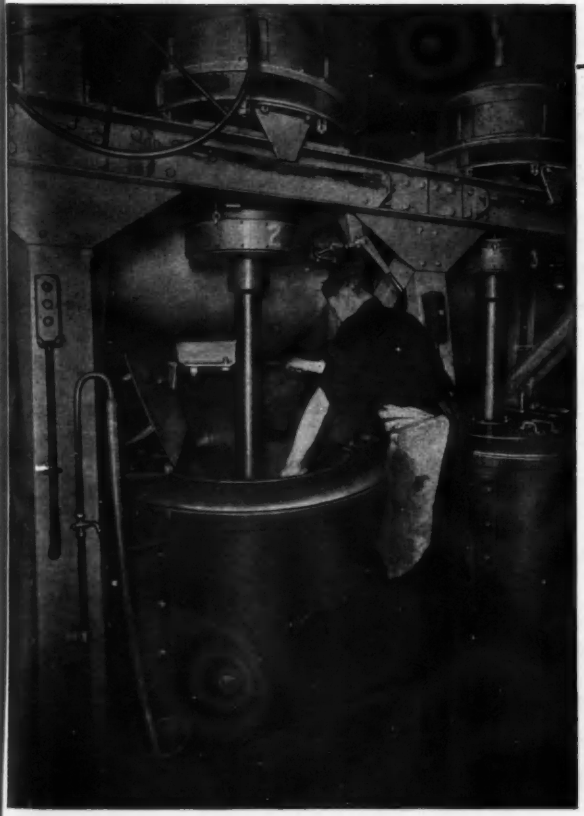

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Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

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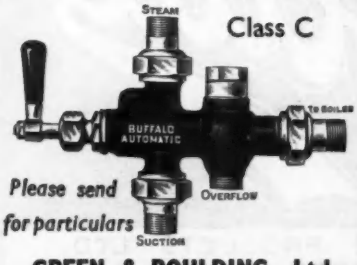

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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

LADY for duties in London showrooms of gas appliance manufacturer. Must have personality and preferably have had experience in the gas industry. Apply in own handwriting, stating age, experience and salary required to No. 149, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

SCOTTISH GAS BOARD

SUPERANNUATION ASSISTANT required for the Board's Headquarters in Edinburgh. Applicants should be experienced in superannuation matters, but ultimate prospects will be better for candidates who hold or will acquire a recognised accountancy qualification. Salary within the range £615/865 with placing according to qualifications and experience. Applications not later than May 25, 1953, to Chief Financial Officer, 26, Drumsheugh Gardens, Edinburgh, 3.

NORTH WESTERN GAS BOARD

WIRRAL GROUP

CHEMISTS

APPLICATIONS are invited for the following pensionable appointments at salaries within Grade A.P.T.VIII (£585-£665 per annum), according to qualifications and experience.

(1) Chemist—Wallasey Gas Works.
(2) Chemist—Chester Gas Works.

The successful applicants will be responsible to the Station Engineer of the Works for conducting all necessary chemical tests connected with the operation of the works, and to carry out any special investigations which may be required from time to time.

Applicants should possess suitable technical qualifications. Gas Works experience, although not essential, would be of advantage.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (Wirral Group), Hind Street, Birkenhead, within fourteen days.

EASTERN GAS BOARD

NORWICH DIVISION

TECHNICAL ASSISTANT—DISTRIBUTION

NORWICH GROUP

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT—Distribution—Norwich Group, at a salary within Grade A.P.T. VI (£490-£570 per annum).

Candidates should have had experience with medium and low pressure distribution systems, and will be required to assist the Group Distribution Superintendent in all aspects of distribution relating to mains and services.

Candidates should preferably be between 25 and 30 years of age, and possess The Institution of Gas Engineers Higher Grade Certificate in Gas Engineering (Supply).

The successful applicant will be required to pass a medical examination, and to join the Board's Superannuation Scheme.

Applications, giving details of training, experience and qualifications, together with the names of two referees, should reach the undersigned within fourteen days of the publication of this advertisement.

J. V. KNIGHT,
Manager.

Norwich Group,
Eastern Gas Board,
Gas Works,
Bishop Bridge,
Norwich, Norfolk.

EASTERN GAS BOARD

NORWICH DIVISION

DIVISIONAL ENGINEERING DRAUGHTSMAN

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. IX of the National Salary Scales.

Candidates must be experienced in general engineering draughtsmanship and have knowledge of the design and construction of Gasworks plant and buildings. Preference will be given to applicants having a recognised qualification of one of the Engineering Institutions or its equivalent.

The person appointed will be required to assist the Divisional Engineer in the setting up of an adequate Divisional Drawing Office and the position offers prospects of advancement.

The successful applicant will be required to pass a medical examination and join the Board's Staff Pension Scheme. Applications giving full details, together with the names of two referees, should be addressed to the undersigned by May 30, 1953.

RONALD A. WESTON,
General Manager.

Norwich Division,
Eastern Gas Board,
Thorpe Lodge,
1, Yarmouth Road,
Norwich.

SENIOR DRAUGHTSMAN required. Experienced in the design of purification and storage plant for the Gas Industry. Alternatively, having knowledge of steel and cast iron tanks, and structural work. Permanent situation with excellent prospects of advancement for first-class man. Superannuation scheme and other advantages. State full details and salary required to: The Secretary, R. & A. Main, Ltd., 48 Grosvenor Gardens, S.W.1.

EAST MIDLANDS GAS BOARD

NOTTS. & DERBY DIVISION

DERBY UNDERTAKING

SENIOR HOME SERVICE ADVISER

APPLICATIONS are invited from suitably qualified persons for the above appointment.

Candidates must hold a recognised diploma in, and have practical experience of, cookery and domestic science, and be capable of demonstrating and promoting the use of gas appliances, and in advising consumers on kitchen and other domestic problems involving the use of gas.

The salary will be within Grade A.P.T. VII (Female) of the National Salary Scales (£436/£500) according to age, qualifications and experience.

The successful candidate may be required to pass a medical examination, and unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, stating age, qualifications and experience and giving full particulars of training, together with the names of two referees, should be addressed to: A. Facer, Manager, Derby Sub-Division, East Midlands Gas Board, Friar Gate, Derby, not later than Saturday, May 30, 1953.

K. L. PEARCE,
Divisional General Manager.

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MISCELLANEOUS

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THESE DAYS, a sound investment is something to write home about. What we write of here is not a new discovery, for it has long been at the disposal of industry. The point is that only the alert are using it to their full advantage. We refer to the help afforded to administration by a FULL PHOTOGRAPHIC RECORD of constructional jobs from foundation to completed building, from rough casting to finished product. Nothing escapes the eye of the camera. No other recorder covers such a wide field. A progressive file of photographs taken at regular, specified intervals, is an ever-present aid to the busy executive. It can be referred to at once in case of any point which may arise during the construction of plant or the making of a product. It shows progress at a glance unmistakably and eliminates the cause of wrangling and argument.

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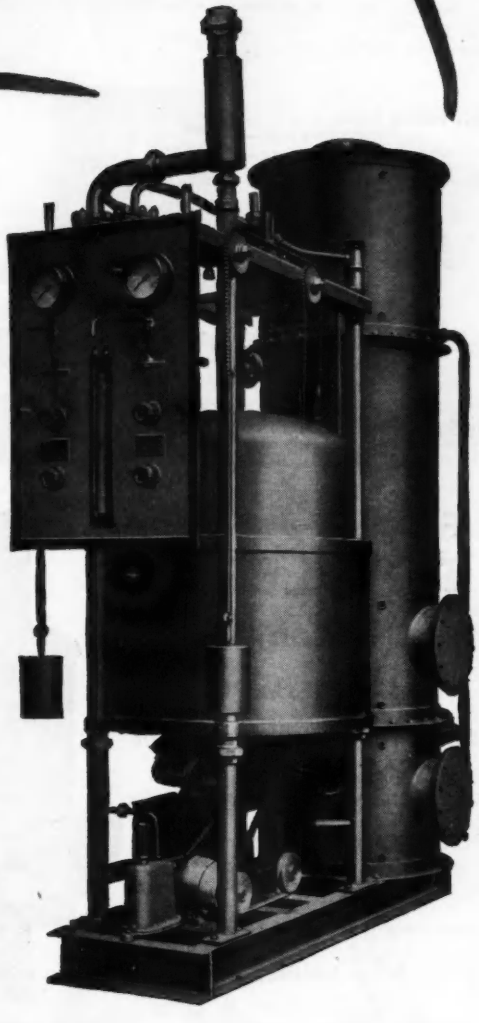

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industrial gas compressors

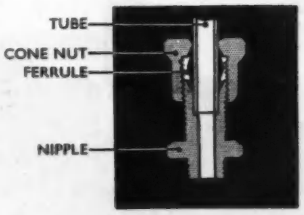
FOR COMPRESSING AIR OR GAS SUPPLIES USED FOR FURNACE HEATING, METAL MELTING, BRAZING, SOLDERING BITS, LAUNDRY IRONS, ETC.

DIRECT COUPLED COMPRESSORS (see illustration right) are fitted with automatic internal by-pass valves and lubrication systems. They are direct coupled to Keith Blackman motors. Type OA compressors in this range occupy a floor space of only 18" x 7½".
CAPACITY RANGE: 100 to 750 cub. ft. of gas or air per hour at 3 lbs. per sq. in. pressure.

TYPE 4 COMPRESSORS (not illustrated) are also fitted with automatic internal by-pass valves and lubricators. The complete unit includes motor and drive on a common bedplate, all of Keith Blackman manufacture.
CAPACITY RANGE: 500 to 20,000 cub. ft. of gas or air per hour at 3-5 lbs. per sq. in. pressure.
AREA OCCUPIED: from 9¼" x 16¼" to 61" x 27".

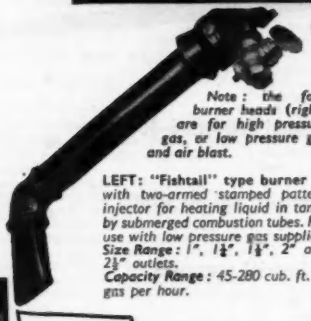
DID YOU KNOW?

KEITH BLACKMAN have been making compression joints for many years and the present design embodies features developed as a result of this long experience. Notice that the shape of the ferrule is such that the joint is made without unduly stressing the tube.



Keith Blackman LIMITED
MILL MEAD ROAD, TOTTENHAM, LONDON, N.17
Phone: Tottenham 4522 (twelve lines) Grams: Keithbla, Norphone, London
BRANCH OFFICES AT MANCHESTER, BIRMINGHAM, LEEDS, GLASGOW, NEWCASTLE-ON-TYNE, PENARTH near CARDIFF, AND BELFAST

serving to burn



Note: the four burner heads (right) are for high pressure gas, or low pressure gas and air blast.

LEFT: "Fishtail" type burner with two-armed stamped pattern injector for heating liquid in tanks by submerged combustion tubes. For use with low pressure gas supplies. Size Range: 1", 1½", 1¾", 2" and 2½" outlets. Capacity Range: 45-280 cub. ft. of gas per hour.

Brass non-blow-off head types: deal with 5 to 10 cub. ft. of gas per hour.

Stainless steel, "F" type head, burner: deals with 8 cub. ft. of gas per hour.

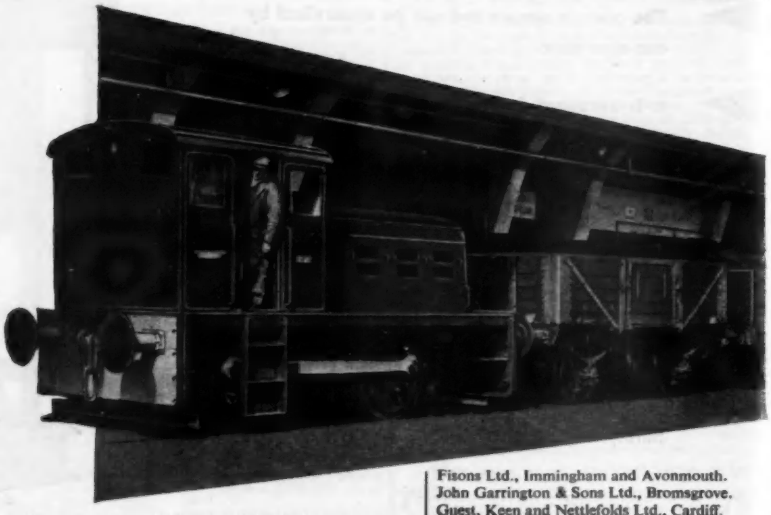
Perforated head type burner: deals with 10 to 15 cub. ft. of gas per hour.

INDUSTRIAL GAS EQUIPMENT

524

150 horse-power
FOWLER
Diesel Locomotive
at Messrs. Boots
Beeston Factory, Nottingham

CLEAN AND SMOKE-FREE operation is essential for the manufacture of pharmaceutical products. This is one of the many advantages achieved by the use of Fowler Diesel Locomotives.



FOWLER LEEDS

DIESEL LOCOMOTIVES

In rail gauges from 2ft.—5ft. 6ins.

Information and literature from:
John Fowler & Co. (Leeds) Ltd., Leeds, Yorks.
Telephone: Leeds 30731 (10 lines)

A Product of the Marshall Organisation, Gainsborough, England.

Some users of Fowler Diesel Locomotives

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Associated Portland Cement Manufacturers Ltd.
Barrow Ironworks Ltd., Barrow-in-Furness.
Boots Pure Drug Co. Ltd., Nottingham.
British Aluminium Co. Ltd.
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What's in a Name..

In this case something worth noting. Continuous research, carried out on our own full-scale gas works; testing gas-making coals, studying problems of retort and setting construction, checking materials used on Glover-West installations, designing new equipment to increase retort house efficiency. A progressive approach to the job of producing efficient carbonisation plant. We are not static. Our aim, in a word, is improvement.

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